

Ham Radio Ireland



Servientes Traditiones et Spiritus Experimentalis Radio



Editor: *Steve Wright EI5DD*

wright14@gmail.com

Vol. 2 Issue 06

June 2023



In This Issue

Forthcoming Events - RSGB Region 8 News - A Mains Filter for the Shack Pt 2
Remote Operation - Extending the Life of Diamond Antennas
The Lazy 8 Transverter Project Pt. 3 - 40m Band Reject Filter
Understanding Solar Parameters - Black Sky Drill 2023
Club Reports and Activities

Ham Radio Ireland was the logical progression from what started as a Magazine covering the Province of Connacht in the West of Ireland.

In point of fact we are the only Independent Radio Magazine in Ireland geared towards the Radio Experimenter.

All clubs and groups are welcomed to submit reports and promotions of their activities and special events. If you are a homebrewer and designer we would welcome your articles.

The format and content of the Magazine will remain the same and we will naturally continue to support Home Brew projects, QRP Radio, Antenna Projects, HF, VHF, UHF, SHF Portable operation, SOTA, POTA, Short Wave Listening, Digital Voice and Data Modes, Hints for the shack, New developments in Radio and Electronics, Radio experimentation, Current technology CB Radio, PMR 446, and much more.

We repeat forthcoming events in our News Section right up to their date of operation. In this way we hope to encourage as many groups or clubs to take part. If you have an event planned feel free to promote it through our Magazine

We are not affiliated to any Group, Club, or Society and therefore remain unbiased and inclusive. This magazine is for all radio and electronics experimenters! We remain non political in all respects of the hobby.

We welcome any articles submitted for publication and encourage those who have never written for a magazine before.

We welcome Feedback
If you enjoyed this publication please email
Steve EI5DD
wright14@gmail.com

Contents

June 2023

News and Events

Forthcoming Events	2
Region 8 News from Northern Ireland	8

Features

A Mains Filter for the Hamshack Pt.2	10
More on Remote Operation.....	11
Extending the Life of Diamond Antennas ..	13
40 metre Band Reject filter	14
Review of the ADX-MINI	15
Lazy Eight Transverter Project pt. 3	17
Understanding Solar Parameters	18
Black Sky Drill 2023	21

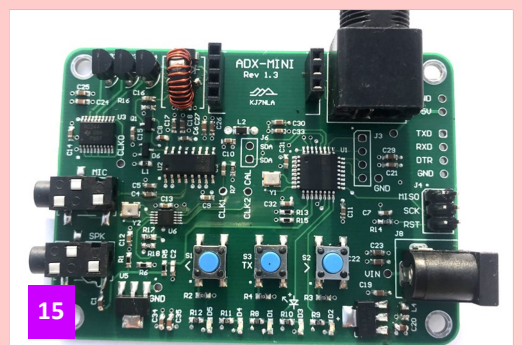
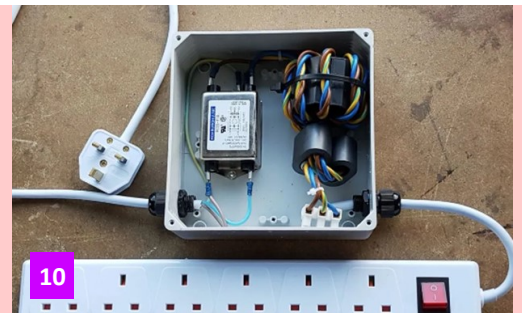
Radio Club's News

RSGB Region 8 Northern Ireland News	8
Galway Radio Club.....	24
Shannon Basin Radio Club	25
Mayo Radio Experimenter's Network	26
Galway VHF Group	30

Submitting Items To This Magazine

We are always delighted to receive any radio related material for this magazine.

Please E-mail us in advance of submission so that space can be allocated.



Cover Image

Mack EI6IVB operating his 4m station during the Black Sky Drill 2023 (East Leinster Club)

Views expressed in this publication do not necessarily reflect the views of the Editor, those of the Carrion Press or the Galway VHF Group



54th Annual Radio Rally

Visit our
Facebook
page for map,
and last-minute
news.

Usual Traders including

- ▶ **P&D CB, Amateur Radio Supplies**
Peter has all types of amateur radio, cb radio, pmr radio, shop radio, and motorbike intercoms in stock.
- ▶ **Test & Radio Equipment**
Brian has loads of hardware and cables at rock bottom prices.
- ▶ **Alan Weise**
Alan has new and used radios, components and test equipment.  *Billy Goat's Stuff*
- ▶ **Bring & Buy**
Do you have surplus equipment? Bring it along.
- ▶ **Worked All Britain**
Ian & Esther WAB G10AZA, G10AZB



RSGB QSL Bureau
and membership stand,
meet the Region 8
Representative.

SATURDAY 17th June 2023

Ballygilbert Presbyterian Church Hall



376 Belfast Rd, Bangor BT19 1UH

**Good parking available in church car-park
and on roadside verge.**

Doors open: 11.30am
Admission: £3.00

Enjoy light refreshments and chat
face-to-face for a change.



BangorDistrictARS

Need directions or to book a table
contact MI00BR at andrewis@live.com



FIND YOUR DREAM RADIO

AT A DISCOUNTED PRICE

BUY USED!



MARTIN LYNCH & SONS LTD. THE WORLD'S FAVOURITE HAMSTORE

MLS
www.HamRadio.co.uk
SAFE ONLINE SHOPPING. E&OE



0345 2300 599

Wessex House, Drake Avenue, Staines, Middlesex TW18 2AP

E-mail: sales@hamradio.co.uk

Opening Hours: Mon - Fri: 8.30am to 5pm. Sat: 9am to 4.30pm.

International Tel: +44 1932 567 333

HAVE YOU WATCHED ML&S TV YET?
Every week there's something new. One simple URL



www.MLandS.TV



FOLLOW US ON TWITTER AND FACEBOOK



HamRadioUK



ML&S - a Personal Service in a Virtual World

These are just a tiny sample of the 100s of positive reviews posted about our service on Trustpilot. Thank you so much!



Fantastic service as always!..

Not had a problem ordering from ML&S yet!..everything is in stock, and if there's a delay of any kind, they'll call you, and let you know (They did on a previous order!)

Date of experience:
March 20, 2023

Acom 06AT - brilliant piece of kit

Bought to use with the Acom 1200S and it performs superbly. After the initial tuning on each band, it automatically transforms antenna impedance to 50 Ohms and an SWR below 1.3:1. The antenna switch is a major plus. My radio and the 1200S are connected by CAT cable and any change in the band/frequency is automatically detected by the amplifier and, in turn, automatically detected by the ATU which switches to the appropriate antenna. This just takes a second or so. Brilliant!

And all this complemented by ML&S's usual first-class service.

Date of experience:
March 17, 2023

Order via internet was seamless

Order via internet was seamless and quick. Delivery was fast. Goods as expected.

Date of experience:
March 16, 2023

All the people are so helpful

If they don't know the answer to the question they will find someone who can. Martin

Lynch & Sons is just like one big Amateur Radio club with the store as an extra big bonus. Keep it up lads we would be lost without you.

Date of experience:
March 17, 2023

Good service

Always acknowledged with a greeting, and any questions are either answered by staff on counter or directed to guys in the office who come out and help. Treated like an important customer even before they knew I was going to leave the shop with a significant purchase. Helpful extras like asking me how my station was set up so that an amplifier wouldn't cause me problems etc. Item carried to car for me because it was somewhat heavy but nice touch. Same level of service whether I've bought coax or a four-figure item. Cheers, MOGVA.

Date of experience:
March 27, 2023

Good service & delivery

Very good packaging to protect the device (box in box with good padding). Please keep it that way - Thanks.

Order to Delivery was excellent and I know I can reach them over the phone if there is a problem.

Date of experience:
March 15, 2023

ML&S

Always enjoy my visits. Staff helpful and knowledgeable, great selection of radio

equipment and accessories available. MOCET

Date of experience:
March 20, 2023

Wanted a new radio but a bit unsure

Wanted a new radio but a bit unsure of what to buy so rang Martin Lynch and Son and spoke to the sales staff, got some very good advice and finished up with a Yaesu FT-710 which I'm very pleased with, Radio arrived next day very well packed and came with the free microphone and stand.

So thank you I appreciate the time you spent with me and in the end I got a really nice radio.

Date of experience:
March 15, 2023

Super quick long range purchase

Could not source a Windcamp portable dipole in Australia or on eBay except for sellers that quoted shipping times in months. In desperation I decided to buy from you from the other side of the world and it was just too easy. The antenna arrived faster than eBay sellers that have the stock 100 km from me.....thank you for your excellent and super quick service!

Date of experience:
March 11, 2023

Antenna repair, excellent service!

Bought an antenna from ML&S, couple weeks later I managed to damage it trying to take it

out of frozen ground! Brought it into ML&S to see if they could fix it. Needless to say Gary S. Had it fixed in a day or two and shipped back to me so we could get back on the air. Amazing job, very glad to have bought from the team at ML&S.

Date of experience:
January 26, 2023

More excellent service today

I've been an ML&S customer for some years now and have always had great service. I've bought big, expensive things and cheaper accessories but whatever it has been, the service is always the same - just great! This morning I had to phone and amend an online order I'd made an error with the night before. The order was only for a few pounds but the help I got from John on the phone this morning was as good as if I'd just ordered a flagship rig costing thousands.

This is the sort of help and service that keeps me coming back to ML&S so keep up the good work guys and WELL DONE all but particularly to John for his help this morning.

Date of experience:
March 13, 2023

Professional handling of requests and excellent attention to details.

I always have peace of mind and total confidence in products I purchase and have done now for thirty years.

Date of experience:
February 16, 2023

MARTIN LYNCH & SONS LTD. THE WORLD'S FAVOURITE HAMSTORE

ML&S
www.HamRadio.co.uk

SAFE ONLINE SHOPPING. E&OE



0345 2300 599

Wessex House, Drake Avenue, Staines, Middlesex TW18 2AP

E-mail: sales@hamradio.co.uk

Opening Hours: Mon - Fri: 8.30am to 5pm. Sat: 9am to 4.30pm.

International Tel: +44 1932 567 333

HAVE YOU WATCHED ML&S TV YET?
Every week there's something new. One simple URL



www.MLandS.TV You Tube

FOLLOW US ON TWITTER AND FACEBOOK



HamRadioUK



News and Forthcoming Events Planning 2023

British Railways Amateur Radio Society

During 2023, the British Railways Amateur Radio Society will be marking 55 years since the withdrawal of steam from British Railways in 1968. Special Event Callsigns GB0LMR and the Club call GX4LMR will be active throughout the year operated by Mark G1PIE active from Preston. QSLs via the Bureau, eQSL, or direct to Pam, 2E1HQY enclosing a SAE. More information from <https://www.qrz.com/>



UK Coronation Celebration Activities



As part of our Coronation celebration activities, Ofcom has approved "R" as the optional Coronation regional secondary locator prefix for all UK radio amateurs to use during May and June 2023. UK Radio Amateurs may apply to Ofcom for a NOV allowing them to avail of this facility.

Special Event Stations

In celebration of the 25th anniversary of the establishment of the Hong Kong Special Administrative Region of the People's Republic of China on the 1st of July 1997, Hong Kong licensed amateurs are granted the use of the special prefix VR25 until the 30th of June 2023. The VR2 Contest Club, and the Hong Kong Amateur Radio Transmitting Society will be using VR25CC and VR25HK, respectively.

YR1400VT is the special callsign that members of Radio Club YO6KGS will be using until the 30th of June 2023 to popularise the newly inaugurated Via Transilvanica, a long-distance trail used for hiking, cycling and horse riding that crosses Romania. More information can be found on QRZ.com QSL via eQSL.

The Isle of Wight radio society will be broadcasting from the Marconi Monument at the Needles on the island for International Marconi Day, 22nd April. Call sign GB0MAR. SSB 40m and 20m and probably CW on all bands.

A group of radio amateurs in Jersey will be using special event callsign GB3KCJ as part of the Coronation celebrations. An opportunity exists for groups in each of the UK nations who have a regional secondary locator, and the Crown Dependencies, to apply for similar special event callsigns.

The Isle of Muck is part of the Scottish Small Islands group along with Rhum, Eigg and Canna called the Inner Hebrides situated off the West Coast of Scotland. The intention is to be on the island from 15th April 2023 until 21st April 2023 using the callsign GB0SIM. There will be two stations operational on all HF Bands from 1.8 - 28MHz SSB and CW.

RSGB tonight@8 Webinars



The RSGB runs a series of monthly Webinars called "Tonight@8" and forthcoming webinars may be found at <https://rsgb.org/main/tonight-at-eight-live-webinars/> Archived webinars may be found at https://www.youtube.com/results?search_query=tonight%408 The Webinars cover a wide interest so there is something for everyone.

The next Webinar is scheduled for the 5th June: **Node-RED for Radio Amateurs** by Mike Richards, G4WNC.

Node-RED is a visual programming language that is very powerful but surprisingly easy to use. The language has matured over recent years and has the potential to be a valuable tool for radio amateurs. In this talk, Mike will provide an introduction to Node-RED programming techniques. He will conclude with a live demonstration to show just how easy it can be to add extra facilities to your rig.

Future Webinars Include:

3rd July: Receiving Antennas are Different by Eric P. Nichols, KL7AJ.

Almost every ham radio station can benefit from a separate receiving antenna (or several!) While reciprocity applies to both receiving and transmitting antennas, the priorities are different. Effective receiving antennas are optimized for best signal to noise ratio, not necessarily the greatest gain. There are countless interesting means of building high signal to noise ratio receiving antennas and we will explore some of these in 'Receiving Antennas are Different'.

5th September: Minos Contest Logging Software by Peter, G3ZPB. Covering Introduction to what Minos does in terms of contest Logging, Installation of Software. Hands on use in a contest. Additional Contest Features. Installing Rig Control and rotator Control. Set up and use of Rig Control.

GB2KC Special Event station



GB2KC Special Event station will be active from Bishop Thornton, Harrogate, England, 1st May - 30th June 2023, celebrating the coronation of King Charles and Queen Camilla. The actual coronation will take place in Westminster Abbey on the 6th May 2023.

QRV on HF Bands.

QSL via eQSL

News and Forthcoming Events Planning 2023



HAM RADIO serves as a platform where radio enthusiasts can get together and exchange information and experience.

As one of the largest amateur radio exhibitions in the world, alongside the Hamvention Dayton/Ohio, USA and the Ham Fair in Tokyo/Japan, HAM RADIO attracts exhibitors and visitors from more than 52 countries all round the world to Friedrichshafen.

A special feature of HAM is the combination of commercial exhibitors, worldwide networked associations and Europe's largest radio flea market with over 300 participants from 16 countries.

International Lighthouse/Lightship Weekend



The ILLW weekend takes place over the weekend of August commencing from **00:00 19th to 23:59 on the 20th of August 2023**. August seems to have become the international weekend for lighthouses. Countries all over the world have become involved in one for or another of lighthouse activity. Some years ago the United States Congress declared August 7th as their National Lighthouse Day and during that first week in August amateur radio operators in America set up portable stations at lighthouses and endeavour to make contact with each other. This event is known as the US National Lighthouse Week.

In Britain the Association of Lighthouse Keepers, ALK, conducts International Lighthouse Heritage Weekend on the same weekend as the ILLW in August. Their objective is to encourage Lighthouse managers, keepers and owners to open their lighthouse or light station and related visitors' centres to the public with a view to raising the profile of lighthouses, lightvessels and other navigational aids, and preserving our maritime heritage.

The ILLW usually takes place on the 3rd full weekend in August each year and attracts over 500 lighthouse entries located in over 40 countries. It is one of the most popular international amateur radio events in existence probably because there are very few rules and it is not the usual contest type event.

RSGB News Services

For your weekly fix of GB2RS, from 80m to UHF DMR. Full schedule available from rsgb.org.uk/gb2rsschedule.

09:30 145.5250 FM

10:00 3.6400 LSB

12:00 DMR BM TG2354

19:30 DMR Phoenix TG880

International Museums on the Air Weekends 2023



International Museums Weekend

Museums on the Air takes place over the weekends of the **17th - 18th and 24th - 25th of June**. The intention of the event is to set up amateur radio special event stations at as many of the museums as possible throughout the whole of the world on HF, VHF and, if at all possible, a Ui-View (APRS) packet station to be set up at each museum site, but the scope of your station is entirely up to you. The choice of museum is also left very much up to you, however, aim for the largest and/or most unusual site you can find.

The museums taking part over the years have included ships, castles, air museums, Napoleonic forts, pumping stations, wireless museums, racing museums and many others. For the purposes of the event, the word 'museum' is loosely interpreted. There really is no shortage of venues in which such an event can be staged, no matter where in the world you might live.

The event has proven itself to be extremely popular and well supported special event particularly amongst the UK radio amateur population. It also went down very well at the museums which were used as the venues for the event, and invitations have again been extended for the coming June. It has shown itself to be a tremendous public relations exercise, as well as all of us having lots of fun over the IMW weekends.

At least part of the intention for this event, is to present modern amateur radio to members of the public and to help us loose some of the stuffy anorak image. What better place to do this than in the very public and well visited areas of the many museums which can be found in most parts of the world?

Those clubs and museums which do decide to take part, should please use the free on-site 'Registration' facility. The 'Registration' is simply to assist us in administration of the event and provide those taking part with an indication of how many and exactly where the museums taking part are located. We also send out a participation award to all stations that register. More information and registration details at <https://www.radio-amateur-events.org/IMW/index.htm>

News and Forthcoming Events Planning 2023

ComReg Revision to Amateur Station Guidelines

Recently, ComReg have issued a new set of "Amateur Station Guidelines" "ComReg 09/45R6 dated 29/05/2023". ComReg notes that:

"for the Amateur Service there is an element of self-regulation by Amateur Station Licensees, and ComReg's role is to establish regulations and guidelines which reflect ComReg's spectrum management functions and objectives. Therefore, where not specified in Tables 2 and 3, ComReg no longer places any restriction on bandwidths, preferred modes or usage but rather encourages Licensees to take account of any applicable Irish national band plans and/or IARU band plans to ensure equitable usage of the frequency bands by all Licensees and to mitigate any potential interference. This approach by ComReg does not negate a Licensee's requirement to comply with relevant licence conditions, specifically those related to, but not limited to, the efficient use of the spectrum, the prevention of harmful interference, complying with ICNIRP, etc"

With reference to bandwidth restrictions, Revision 5 of the document appeared to have a "cut and Past" of the IARU Region 1 Band Plans that left a grey area as to whether AM operation would be legitimate on the HF Bands from Top Band to 15 metres. Following the IARU Band-plan it would have appeared that any signal with a bandwidth of >2.7KHz would not be permissible.

Revision 6 has eliminated any doubt and AM is permissible on all bands.

ComReg's Station Guidelines may be downloaded from : <https://www.comreg.ie/media/2023/05/ComReg-0945R6.pdf?fbclid=IwAR0znWmouRB5a1->

Mid Ulster Amateur Radio club

Mid Ulster Amateur Radio Club meets on the air weekly on the GB3WT repeater every Monday evening at 7.30pm. There will always be a net controller from the club, but everyone is welcome to call in and join the conversation. The club meets socially on Zoom twice each month. If you're in the region, and would like to take part, the club secretary can be contacted on the following email address: muarc.secretary@yahoo.co.uk

IARU Open Innovation Zone at HAM RADIO 2023

Step by the IARU Open Innovation Zone, where we invite you to explore exciting projects from our community. From software-defined radio to powerful digital signal processing tools and captivating citizen science initiatives, you'll witness the future of amateur radio unfold before your eyes. Active members of our community will introduce you to their projects, expertise and inspiring stories that will ignite your imagination and propel you into your own exciting radio adventures. Discover the possibilities, connect with fellow enthusiasts, and be part of a revolution that pushes the boundaries of amateur radio.

Join us at the IARU Open Innovation Zone, where innovation meets passion, and together, we'll reshape the future of amateur radio. Amateur Radio is about making contacts but also about contributing to science! Monitor ionosphere, receive signals from stars & hydrogen, decode earth observation satellite... come to share your experience and meet the experimenters.

Irish Net

Active not only on Sundays, but most weekdays starting at around 16:00 UTC, the informal gathering on 14.156 MHz frequently suffers from QRM during contests and DXers unaware of this long standing net of North American operators with an Irish connection. In a recent contact on 20m with W11IDP, QTH Tuscon Arizona, operator Jerry confirmed that the net now also uses the 17m band operating on 18.114 MHz, avoiding the increased QRM on 20m and taking advantage of improved propagation conditions

Online Amateur Radio Community (Northern Ireland)

The Online Amateur Radio Community runs a 40m slow-to-medium speed CW net every Monday evening at 7pm. All are welcome to join in. For more information see morse.oarc.uk. On the first and third Saturdays of the month, the group holds a virtual social night called 'The Rubber Duck' on Zoom. For more information, see oarc.uk

Would You Like to Promote Your Club and its Activities?

Is your club planning an event in the next month?

Are you planning a club activity?

Are you setting up a new Repeater or Gateway?

Drop us a line or two and we will include your item in the Ham Radio Ireland letter

We Have a Facebook Page The Ham Radio Ireland Magazine



<https://www.facebook.com/groups/1437072523434876>



News From Northern Ireland - RSGB Region 8



Northern Ireland Radio Club Meetings

The Strangford High Frequency Enthusiasts Group is accepting UK-wide enrolments for the next UK Full licence training programme. They also use Google Meets on Monday evenings. It is completely free, email GI0VKP@gmail.com for details or see the [QRZ.com](#) entry for GI0VKP.

Carrickfergus Amateur Radio Group continue to meet for Club nights on Tuesday evenings from 7pm in **Elim Pentecostal Church, North Road, Carrickfergus, BT38 8ND**. All visitors are welcome. Contact the Club: carg@hotmail.co.uk

Bushvalley Amateur Radio Club has a club net on Tuesdays at 8.30pm on 145.300MHz. On Thursday, the club meets at The United Services Club, Roemill Road, Limavady. Contact Jason, MI3UIW, via email to Bushvalleyarc@gmail.com

West Tyrone ARC holds regular monthly meetings on 2nd Wednesday each month at 19:30 in Strathroy Community Centre, Omagh, BT79 7XE. Contact: info@wtarc.org.uk for more information

Lough Erne Amateur Radio Club normally meets at 7:30pm on the first Monday of each month at the Share Centre, Lisnaskea. More information from: <https://lougherneradioclub.co.uk/>

The Mid Ulster Amateur Radio Club (MUARC) has been active since 1965, our Club call sign is **MN0VFW**. Please take time to look through our website, where you will find information on our club, activities, events and members as well as a great gallery full of images of our latest activities. Mid-Ulster Amateur Radio Club meets on the air weekly on the GB3WT repeater every Monday evening at 7.30pm. There will always be a net controller from the club but everyone is welcome to call in and join the conversation. The club meets socially on Zoom twice each month. If you're in the region, and would like to take part, the club secretary can be contacted on the following email address: muarc.secretary@yahoo.co.uk

You can go to www.youtube.com/muarcmedia and that will bring you to our YouTube channel with all our previous lecture videos and much more content in the pipeline.

The Online Radio Club has a virtual radio club night at 7:30 pm every Thursday via Zoom. It is suitable for all Radio Enthusiasts regardless of individual skill level. To to the website for the meeting link <https://onlinradioclub.org/>



Ballymena Amateur Radio Club meets every Thursday at 70, Nursery Road, Gracehill, Ballymena except during the summer months (June, July, and August) when we only officially on the first Thursday of the month, however there are some members there nearly every Thursday Night. Details from Hugh Kernohan GI0JEV (Secretary) HKernohan@aol.com

City of Belfast Amateur Radio Society meets on the first Monday of each month a 8pm in the Shorts Recreation Clun, Aircraft Park, Hollywood Road, Belfast BT4 1SL Contact Paul Irwin GI6FEN for more information. paulirwin@btinternet.com

Mid Ulster Amateur Radio Club meets on the second Sunday of Each month in the Brownlow Resource Centre, Craigavon, Co Armagh. For more information contact muarcsecretary@yahoo.com

If your club is not included on this page please notify us and we will add it to the next issue

Contact ei5dd.steve@gmail.com

Bangor & District Amateur Radio Society



54th Annual Radio Rally

Visit our Facebook page for map, and last-minute news.

Usual Traders including

- ▶ **P&D CB, Amateur Radio Supplies**
Peter has all types of amateur radio, cb radio, pmr radio, shop radio, and motorbike intercoms in stock.
- ▶ **Test & Radio Equipment**
Brian has loads of hardware and cables at rock bottom prices.
- ▶ **Alan Weise**
Alan has new and used radios, components and test equipment.
- ▶ **Bring & Buy**
Do you have surplus equipment? Bring it along.
- ▶ **Worked All Britain**
Ian & Esther WAB GI0AZA, GI0AZB



RSGB QSL Bureau and membership stand, meet the Region 8 Representative.

SATURDAY 17th June 2023

Ballygilbert Presbyterian Church Hall



376 Belfast Rd, Bangor BT19 1UH
Good parking available in church car-park and on roadside verge.

Doors open: 11.30am
Admission: £3.00

Enjoy light refreshments and chat face-to-face for a change.



Need directions or to book a table contact MI00BR at andrewis@live.com

BangorDistrictARS

John McCullagh, GI4BWM, RSGB President

I was honoured to be installed as the 76th President of the RSGB on 15th April this year. Perhaps somewhat appropriately, given that I am from the North, my first official duty was to represent the Society at the IRTS AGM Gala Dinner in Ballinasloe where I had a very warm welcome as I brought greetings from the RSGB and proposed a toast to the IRTS.

I was invited to say a few words and I told the following story.

“When I was a very small boy growing up in County Derry I am told that I was dreadfully scared of the wireless, no matter how much my mother comforted me and told me that there really wasn’t a man hiding inside the box I would have none of it and wanted it turned off! How times have changed, I could never have foreseen that the “wireless” of which I was heartily scared off would become my hobby and in fact my profession. And even more difficult to predict would be the fact that I find myself here tonight as your guest bringing greetings from the RSGB as their President – and one who comes from the North of the Island.”

I am not the first President from GI as I can count among my predecessors Barney Patterson GI3KYP/EI4BC (the only person to have been President of both the RSGB and the IRTS), Terry Barnes GI3USS and Ian Kyle GI8AYZ all of whom I worked with in my professional career as a radio engineer.

The RSGB has a membership of just over 21,000, was founded in 1913 and incorporated in 1926. Amateur Radio has changed almost out of all recognition since then and along with those changes there has also been immense societal changes which are proving to be a challenge for all national membership-based organisations. COVID has brought even more changes with the decline in attendance at clubs and radio rallies. This last challenge is one that we faced head on, when with our dedicated band of volunteers and staff we commenced a series of webinars called Tonight@8 which was very successful indeed during ‘lockdown’. In fact it has been so successful that it is still running and can be found here: <https://rsgb.org/main/tonight-at-eight-live-webinars/>

Another fantastic piece of work was to see our whole exams process brought on line, enabling a very significant number of people to get licensed even with the pandemic movement restrictions in place,

Like most societies we are facing the problem of an ageing membership and as the demographic timebomb as someone put it, was ticking away, we devised a strategy with eight strategic priorities which was to take us from 2017 to 2022. For all sorts of reasons this has not moved forward as quickly as we would have liked so in the next few months we will be refocusing on the main areas which



**John McCullagh, GI4BWM
RSGB President**

are likely to be growth and membership. Interaction with schools and universities will also be key things to work on to ensure that we at least plant the seeds of Amateur Radio in the minds of young people as they move out into the high-tech world. To help us keep in contact we have established both Schools and Universities zones on our website: <https://rsgb.org/main/clubs/school-zone/>

You can see that we certainly have lots to do, and I look forward to the challenge of leading the Society over the next two years.

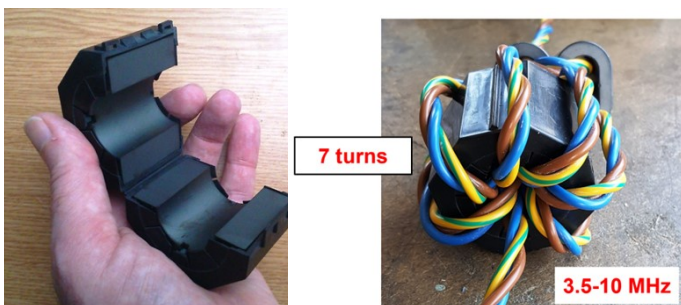
There is much more information on our website <https://rsgb.org/> so do pay us a visit there and if you wish to contact me at anytime my email is president@rsgb.org.uk

**John McCullagh, GI4BWM
RSGB President**

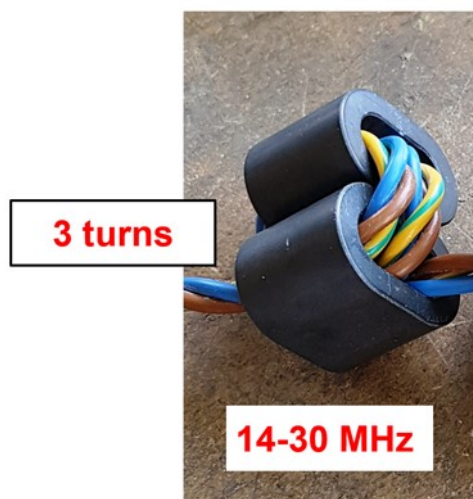


A Mains Filter for the Hamshack Part-2

Building a mains filter for an amateur radio shack using an EMI filter and Fair-Rite cores is an excellent way to minimize electromagnetic interference and ensure that your radio equipment operates smoothly. This approach is highly effective and straightforward to implement, making it an excellent option for both experienced and novice electronics enthusiasts.



Wind seven turns of the stripped 3 core mains flex around the core as shown above. Space the six turn equally and pass the seventh through the middle.

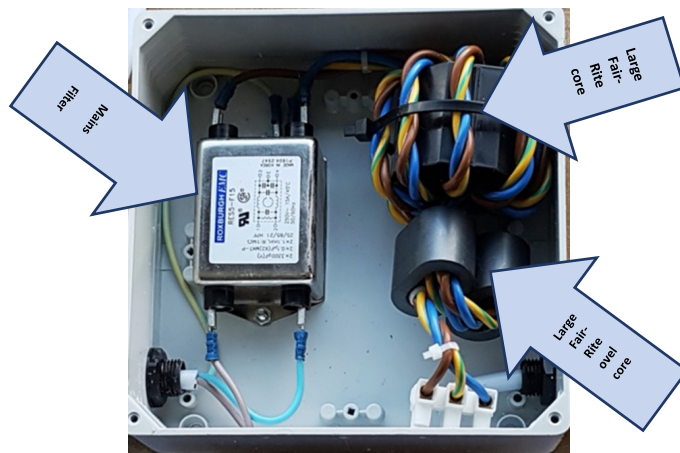


Wind three turns of the stripped three core mains flex around the oval cores as shown above. Use hot glue to hold them together. Make sure you twist the three cores together and solder the three ends together.

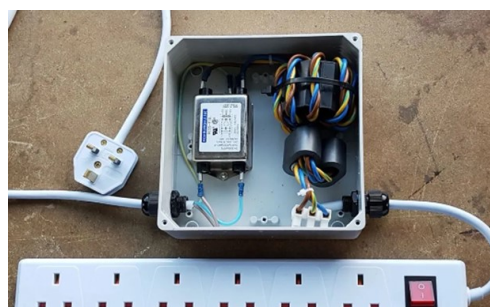


EMI Filter

Connect the input and output three core mains flex as shown using spade connectors to the mains filter. A few terminal-blocks allow for simple connection to the mains feed for the cores.



Set up in Box



The Finished Mains Filter

Before I wrote this article, I had installed the filter in my Shack and made some comparisons between my back-up battery, mains and mains with this filter – my honest conclusion is that I appear to have a very good RF location with little noise, therefore very little difference, even on 80m and 40m which is exceedingly quiet here. But in saying that I can hopefully rule out any hash coming through the mains going forward.

I hope you enjoy building this mains filter and as always follow the safety rules when working with electricity.

Bill Of Materials (BOM)

- 15A or 16A mains filter, single phase, 250VAC rated: 1 OFF
- [Large Fair-Rite core](#) 0431177081: Mouser or Farnell: 1 OFF
- Large Fair-Rite oval core 0431177081: Mouser or Farnell: 2 OFF
- IP65 ABS Enclosure - 170x170x75mm: 1 OFF
- Plastic cable glands, 5-10mm size: 2 OFF
- 3m of 3-core 2.5mm² mains flex, 90°C rated.
- 13A socket extension lead: 1 OFF.
- 13A plug: 1 OFF.
- Spade connectors.
- Strip connectors.

Lez Ferguson EI4GEB

More on Remote Operation - Mike Higgins - EI0CL

Looking back to Marconi's operations south of Clifden Co. Galway we can see that the transmitting station located at Derrigimlagh was connected by a four wire telephone line type system to the receiving station in Letterfrack, located 17 miles north of the transmitting site. The idea of course was full duplex operations on a single frequency or a different frequency.

Applying this idea to Experimental Radio has its uses, its is easy to do and there are considerable benefits, in the following paragraph we outline some of these and which are infinitely expandable.

Firstly, the requirement to listen on a different antenna to the transmitting system antenna at the typical radio installation requires some form of switching, either you reprogram the radio itself, transceiver operation assumed, to TX on antenna one and RX on antenna 2, or you physically switch between the two antennae, alternatively, you use an external antenna switch, other than an automatic switch e.g. the ACOM SW2000. any way that is not automatic is time consuming – this can result in a nonlinear style of operation, this is especially true in DX or contest working.



ACOM Automatic Antenna Selector



ACOM SW2000 remote switch available from Wescom although there are many other versions

One cannot listen and transmit at the same time on two local antennas on the same or a close adjacent frequencies -due to the receiver becoming overloaded by the transmitted RF unless using very expensive Duplex Filters and appropriate frequency separation. Even then, there may be issues of overloading to resolve. Now if using the same transceiver locally via cable, local remote LAN



Derrigimla – An additional Marconi Receiving Station in Letterfrack, Co. Galway operated briefly from 1913 until 1917

ethernet, or remote over fibre, you are now using a PC of some sort by default. Similarly, if running an automatic Linear Amplifier with this Transceiver, both can be monitored on either one or preferably two PCs. These need not be expensive types. In the outlined case think of the connecting cable. LAN or Fibre simply as a longer microphone cable and PTT switch cable and nothing more.

The next issue to consider is the antenna system and the PCs in use, one can make this a very neat remote full duplex, multi-receive antenna system. One such configuration is detailed below - it is relatively inexpensive, works superbly well –and in the example it is working on the 160-80-40 meters bands to great effect.

The transmit antenna can be the best you can muster for all or any of these bands and can be fixed beams or directional rotatable beams as you will in your local remote radio room or at the transmitting station.

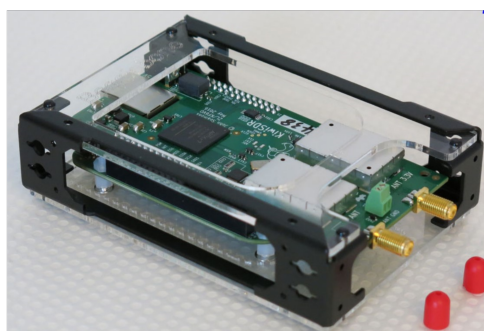
Provided the RX antennas are located far enough away from the TX antenna system, preferably beyond ground wave propagation, any receiver connected will not suffer overload when receiving on the TX frequency. In the example in question one set of RX antennae is located over 50KM away from the TX site. Here we are considering the bands 80-60-& 40 meters in particular) from the Tx antenna system. These remote antennas are 3 x 305 meter beverage systems – the issue then is A how to connect the required antenna to the receiver at any given time B how to hear this receiver at the transmit site. *Examples are shown at the end of the next page.*

To solve the problem of switching antennas, the SW2000 switch is useful. It can be operated over fibre remotely to switch the antennas and also when off, the antennas are grounded.

Next what receiver to use. One can pay a lot of money of course for a good remote-able receiver as the ICOM IC-R or SDR Transceiver series, however the ubiquitous KIWI is ideal, very good, cheap and can be operated over fibre very easily and its well known to most radio experimenters.

More on Remote Operation - Mike Higgins - EI0CL

The remote site must have power, preferably a UPS , internet and you supply the rest.



KIWI SDR Receiver

Now on PC 2 at the operating location it is quite easy to call up this KIWI to listen to the frequency you wish to be called on i.e., simplex, or UP or Down by X KHZ in band or indeed Cross band and on the antenna you choose.

Now listening remotely on your transmit frequency will allow you hear what you sound like, enable good audio tailoring, and help reduce any excessive band width issues and the like. You will have the benefit of hearing replies on the beverage or whatever antenna you have installed/selected on the remote site.

You will of course hear any response in the chosen direction of the antenna, at the same time reducing unwanted activity from behind the antenna especially if it's a beverage or well-designed Yagi etc. This will allow you work through QRM, even the woodpecker provided that you are listening in the opposite direction to the direction the QRM is coming from. Moreover, you can switch to any antenna connected to your remote receiver to check what is happening in any direction you wish to listen to

Further, as you transmit, and a station you are working responds e.g., out of turn then you will hear that transmission and so avoid doubling most of the time. If there is QRM of any kind on the frequency as you TX you hear that QRM and can take appropriate action .

Above a triple antenna system has been discussed in the remote—the SW2000 has a 10-pole setup-10-antenna positions available —so you could have 10 antennas to choose from.

Remote sites can have their own onboard problems so more than one remote site may be available, in this case a second, third or more Kiwi s and switch are needed to fully exploit the opportunity.

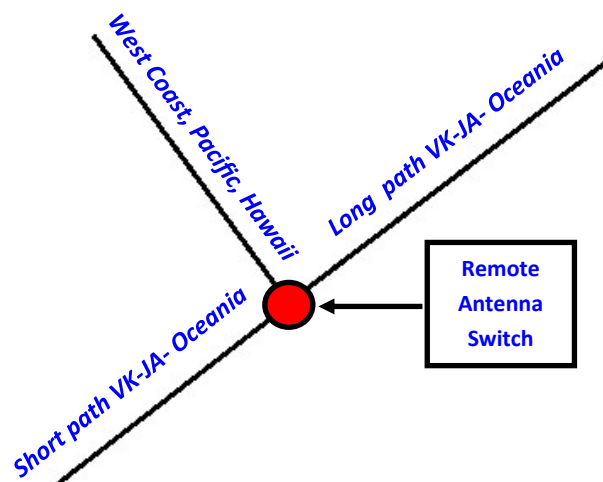
The next issue is how to listen to the remote RX while transmitting and prevent received audio getting back into the TX—quite simple. Modify a pair of headphones so that the remote RX side is connected to say PC 2 audio that listens to the remote or local receiver-the other side listens to the local transceiver on your first PC.1—use MUTE on either RX as appropriate.

Finally, its good practise to be able to switch of any remote station completely in an emergency—easily done via a remote ON/OFF switch.

EXAMPLE Remote RX 1 (next column)

Three Beverage Antennas

- 1 pointing 50 degrees Short Path VK-JA -Oceania**
- 2 pointing 330 degrees West Coast/pacific Hawaii.**
- 3 pointing 230 Long Path of antenna 1 above.**

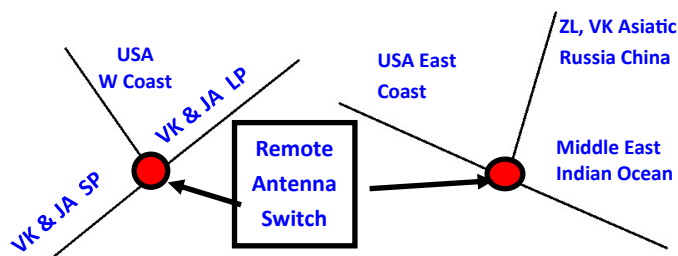


Example 1 - 3 Beverage Antennas

EXAMPLE REMOTE RX 2 at a Separate Receiving Site

As Example 1 but with 3 more antenna

- 1 pointing 285 degrees East coast USA/Canada**
- 2 pointing 105 L degrees**
- 3 Long Path of above + Middle East Indian Ocean**
- 4 pointing 15 degrees ZL/ Asiatic Russia/China etc**



Beverage antennas set up at Location A

Beverage antennas set up at Location B



ICOM transceivers including the IC-7300 and IC-7610 may be used as remote receivers also the IC-R8600 receiver may be another choice but why use such an expensive system when the remote SDR such as the KIWI is a perfect alternative.



A simple modified USB Headset may be used to monitor the remote receiver on one side and the transceiver on the other side.

Marconi Radio Group - EI0MRG

wescomradio@gmail.com

Extending the Life of Your Diamond 300, 510 or 700 Verticals

The secret to a long life of your Diamond 300, 510 or 700 Verticals.

The above mentioned Diamond (or Comet equivalent) antennas are in extensive use by many EI radio experimenters. I am one of them and have both the 300 and the 510 up here. To keep these antennas functioning as designed it is imperative that water does not get into them. The 300/500/700 are made up of sections that need to be coupled together. Sadly... unless great care is taken... these are potential water ingress points and you really do not want water to get inside the Fibreglass.



The Diamond 300 Vertical

I use the following methods here and never had a water ingress problem. Start by coupling the sections together as per the instructions and where the copper elements are connected together... I would suggest a small drop of BLUE thread lock compound. Don't use the RED thread lock.... It will cement those screws in forever.

Pay particular attention to the placement of the O ring... there should be a line on the glass fibre on which you should place the O ring. Once done, screw the couplers into each other tight so the O Ring is compressed.

Now... for the ultimate in weather proofing. Apply a run of electrical insulating tape, overlapping 50%

from at least 1 inch below to 1 inch above the coupler. While you overlap keep some tension on your tape. Once this is done, apply CoaxSeal, or a similar product, over the insulating tape, again I recommend overlapping each turn. Once this is done, apply another overlapping run of electrical insulating tape over your coax seal that you just applied.

The reason for the first layer of tape is that overtime, CoaxSeal and similar products, can become harder to fully remove, but your first taper layer makes this job a breeze.

Do this for all the sections that you coupled together

These antennas all have short stainless steel radials. Again, unless you love climbing towers and masts, apply a drop of thread Lock compound on the threads while you screw them in.

Two final points here: There is a very very small drain hole right next to your SO239 or female N type connector. When you wrap your tape or Coax Seal around your male coax cable end connector, make sure that you do NOT block this drain hole!

I personally apply a small bit of Coax Seal to all places that I consider vulnerable. At almost 79 years old climbing masts is no longer my favourite pastime.

Another point. Many hams have found that the manufacturers supplied aluminium tube into which your assembled antenna goes, will over time start to suffer. The pro's amongst us have replace that aluminium tube with either a stainless steel one or galvanised steel one.

Take note that Diamond a good year or so ago replaced the SINGLE screw that holds the actual antenna in this mounting tube with a double set of screws... I guess they became aware that a single screw in our weather here just isn't up to the task.



Another trick is to cut a 1 inch slot into the top sections and mount a stainless steel jubilee clip to squeeze the top section together if you can't find the proper S/S or galvanised steel tubing.

Finally, observe the manufacturers max power rating for these verticals. The small ceramic capacitors inside just cannot take much overload and this can become a failure point. Also be aware that COLD solder joints have been reported more than once.



The Diamond 510 Vertical

Albert Kleyn - EI7II

A 40 metre Band Reject Filter

I attended a special event station this weekend and we ran two stations. One was be on 40 meters and the other one was on 20 meters and above. We've run this event for a few years now and we've had a problem with out of band interference. The 40 meter station always seems to break through to 20 meters so we had to come up with a solution.

One resolution is a coax stub filter. It really is quite simple to make. You need three one quarter wave lengths of good quality coax, two 't' connectors and four PL259 plugs for the parts. To measure the response of the filter I used a Nano VNA I could have used an MFJ antenna analyser to measure the quarter wave length by trimming the coax until the reactance on 7.100 MHz was zero, but with the VNA I can measure the actual loss in dB plus I can see the bandwidth.

To make a coaxial band reject filter, you will need the following materials:

1. Three lengths of coaxial cable that will serve as your Filters
2. 4 PL259 coaxial connectors
3. A soldering iron
4. A knife or wire cutters
5. A soldering wire
6. A vector network analyser
- 7.

Nice to have but not essential, coax scissors



Here are the steps to make a coaxial band reject filter:

Cut three lengths of coaxial cable to your desired filter length. I used an MFJ259 Antenna Analyser to trim the coax to 0 reactance on 7.100MHz. You can use any coaxial cable, but it's best to use a high-quality, low-loss coaxial cable. I used Westflex 103

Using one length of coax, attach two PL259 connectors at each end and put this to one side.

On the other two lengths connect one PL259 at one end.

Using the SO239 T connector attach one length of coax

to the bottom connection. Connect the Nano VNA to the other two connections. Set the Nano VNA to 5MHz to 10MHz and calibrate. Set the trace to logmag and the steps to 5dB / Division and take a reading. Trim the coax until the dip is around 7.100MHz. I used Messi and Paoloni coax scissors which were excellent and made things very easy for me.

Once trimmed you should see something like on figure 1.

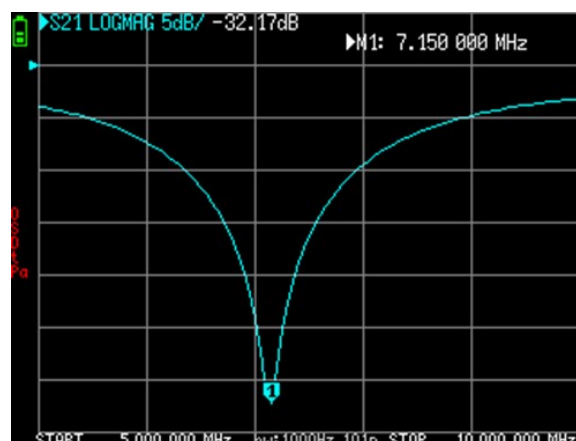


Fig.1 trimming coax for dip at 7.100 MHz

As you can see, I get a rejection of 32bD at 7.150MHz. Once done, repeat with the other length of coax. When you have that completed connect the two SO239 T connectors with the length of coax that has the two PL259's on them. Connect the other two coax lengths the the bottom of the T connectors, one each.

Connect the Nano VNA to the free connectors, set the scale to 10dB/Division and take a reading. It should look something like in figure 2.

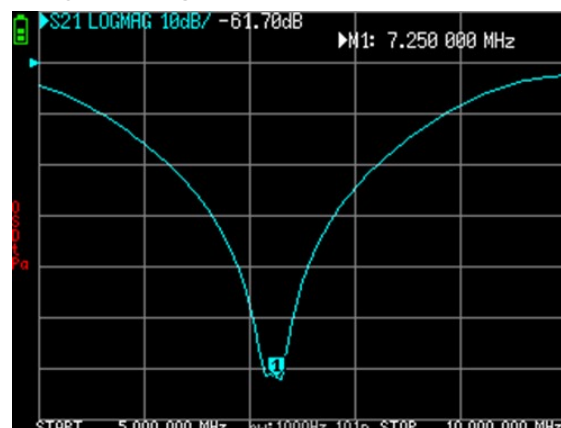


Fig.2 showing dip of over 60dB on 7.250 MHz

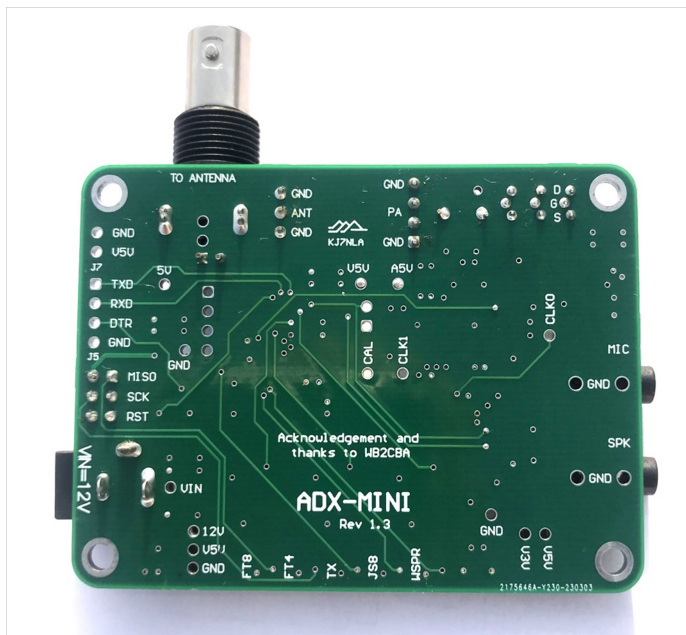
As you can see, I have a dip of over 60dB on 7.250MHz. That's enough to operate on 40 meters and 20 meters at the same time. A commercial filter will cost around £400 and I built this for around £60 and it was great fun to make. That's it! With these steps, you can create a basic coaxial band reject filter using common materials.

Micheal Na bPoib - MIOHOZ

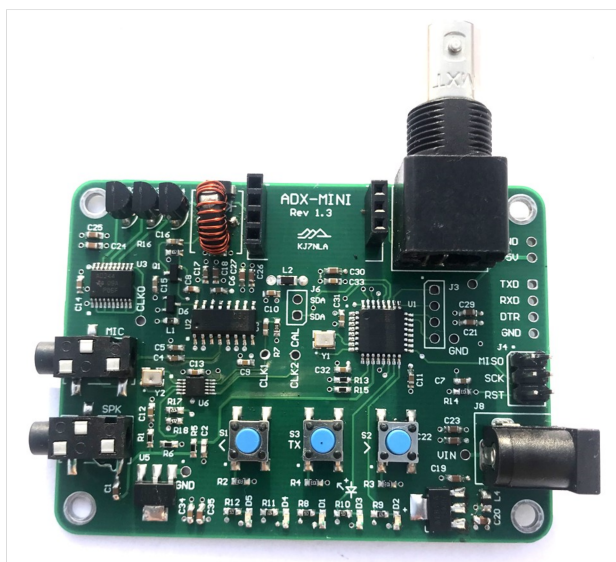
mick.conaghan@gmail.com

A review of the ADX-MINI - Jason Markham - 9H5BM

Are you an amateur radio enthusiast looking for the perfect digital HF transceiver? Look no further! The ADX-MINI has arrived, and it's here to revolutionize your radio experience. Developed by the brilliant mind of Scott L. Baker, and building upon the success of the ADX-Arduino digital mode transceiver by radio engineer Barb WB2CBA, the ADX-MINI is a sleek and simple device that offers exceptional performance and functionality.

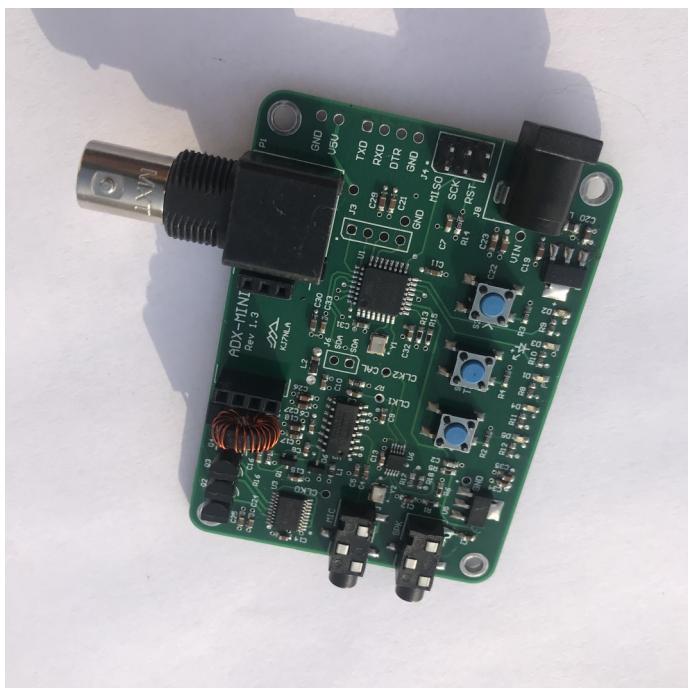


One of the standout features of the ADX-MINI is its compact and reliable radio receiver, which covers the H.F bands with the powerful CD2003 receiver chip. This ensures that you receive crystal-clear signals and enjoy an immersive radio experience like never before. The ADX-MINI's transmitter is equally impressive, powered by an advanced AVR Atmega328p chip operating at 16 MHz and utilizing the Si5351 chip for frequency generation in the transmitter stages. With a Mosfet Class-E QRP (PA) for its final stages, the ADX-MINI delivers excellent signal strength and unparalleled clarity.



Recent software updates have taken the ADX-MINI to new heights by introducing CAT control for Band, Mode, and PTT modes, leveraging the KENWOOD TS-2000 commands. This means that you have seamless control over your transceiver, enabling you to effortlessly switch between bands and modes with precision and ease. The ADX-MINI offers four unique modes tailored to suit your needs: Calibration mode for precise alignment, Band mode for easy band selection, Data mode for controlling various data modes such as FT8-FT4-JS8-WSPR, and CAT mode for intuitive operation.

Operating the ADX-MINI is a breeze. Simply pair it with a USB sound card dongle and decoding software like WSJT/X or similar data software running on a laptop or Raspberry Pi. The front buttons of the ADX-MINI provide an intuitive interface for navigation, transmission, and mode selection, ensuring a user-friendly experience that will make even novices feel like seasoned operators.



Not only does the ADX-MINI deliver exceptional performance, but it also boasts a sleek and modern design that will turn heads in any amateur radio setup. Its small form factor makes it easy to integrate into any station, while its reliable construction ensures durability and longevity.

In conclusion, the ADX-MINI is a game-changer for amateur radio enthusiasts. Its outstanding performance, ease of operation, and compact design make it a must-have gadget in the world of digital HF transceivers. Whether you're a seasoned operator or just starting your radio journey, the ADX-MINI will empower you to explore the exciting realm of digital modes. Don't miss out on this ultimate choice for amateur radio transceivers. Order your ADX-MINI now and unleash the power of digital modes!

Jason Markham - 9H5BM
jmcervv@gmail.com

The Lazy Eight Transverter Project Part 3 - Transverter Notes

The receive section of a transverter is the same as a receiver up to the IF. Instead of a narrow band IF filter a broadband one is used. The same design requirements must be met.

Sensitivity

The noise produced in the receiver limits the smallest signal receivable. If the signal level is below the receiver noise it cannot be received. A noise figure or signal to noise ratio is given for a receiver. Alternatively, when Dynamic range is considered the minimum discernible signal is specified, MDS. The MDS is a signal at the same strength as the noise described in -dBm for a given bandwidth. The expression Noise Factor is used to compare the noise added to a receiver by a stage/circuit and Noise Figure is the Noise Factor in dB (the log version of Noise Factor). All passive elements, filters diode mixers etc) have a noise figure in minus dB.

This equation gives the noise voltage in a conductor caused by Thermal agitation of electrons and other charge carriers.

$$V = \sqrt{4kTB R}$$

V is the RMS voltage.

T the temperature in Kelvins.

k the Boltzmann constant. 1.3803×10^{-23}

B the bandwidth under consideration

R the resistance of the conductor

If we have a 50 Ohm antenna, and want to receive a bandwidth of 3KHz at room temperature 293K the noise generated will be: 0.049 Microvolt.

The Power is given by $P = kTB$

Thermal noise power at 293K is -174dBm / Hz Radio Astronomers prefer to work in power levels

Assume a 70 Ohm dipole TV antenna. Bandwidth 5MHz back in the day of analogue. Temperature 290K using:

$$V = \sqrt{4kTB R}$$

The Noise voltage is 5 picoVolts²

Assume a 1mV signal at the antenna then the signal to noise ratio is 2×10^5 (53dB)

If we have a coax cable with a loss of 4, (-6dB) and TV receiver with a noise factor of 2 (-3dB) and a gain of 20dB.

Antenna plugged directly into the receiver. Output signal/ noise = $2 \times 10^5 / 4 = 5 \times 10^4$ (47dB) Antenna to cable to receiver.

The cable loss is 6dB so the Output signal / noise = $(47 - 6) = 41\text{dB}$

47dB gives a minimum acceptable signal for a PAL colour signal, 41 dB gives a noisy signal.

Connect a pre-amplifier at the antenna. Antenna to preamp, to cable, to receiver.

A simple formula by Friiss for cascaded units is:

Overall noise $F = F_1 + ((F_2 - F_1) \div G) + ((F_3 - 1) \div G_1 \times G_2)$ $F = 3\text{dB}$ $F = 2 + 3/100 + 3/25 = 2.15$ about 3dB.

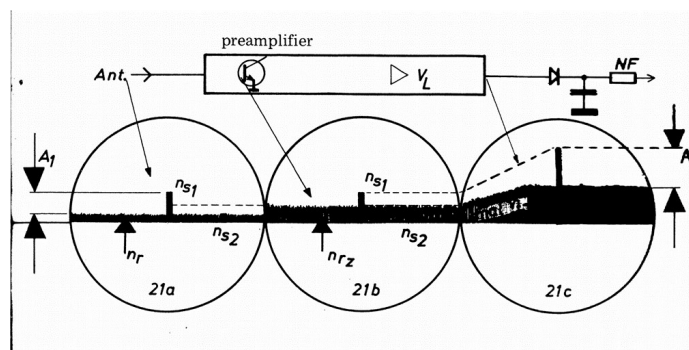
So receiver S/ N = 53dB (best from antenna) -3dB = 50dB 9dB better than the minimum acceptable signal.

Placing a preamp at the antenna might be considered awkward but consider a preamp at the receiver.

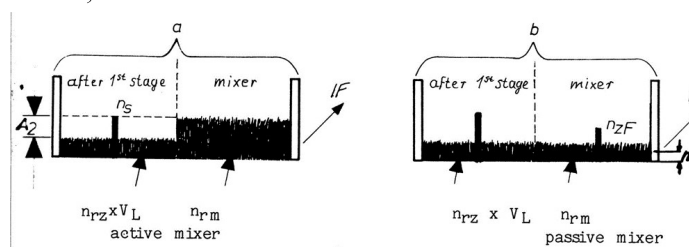
$F 4 + 1/(1/4) + 3/(1/4)100 = 4 + 4 + 0.12 = 8.12$ about 9dB!

So, receiver S/ N = 53dB (best from antenna) -9dB = 44dB Remember 47dB gives a minimum acceptable signal for a PAL colour signal. 41 dB gives a noisy signal. So 44dB is of no use.

Now you know why a 2m pre-amplifier is placed at the antenna not after cable loss has caused the signal to disappear under the noise.



Below two mixers one active one passive, gain is not always useful if the stage has a high noise figure. The passive has a loss but the signal is above the noise, not lost in the noise of the active mixer!



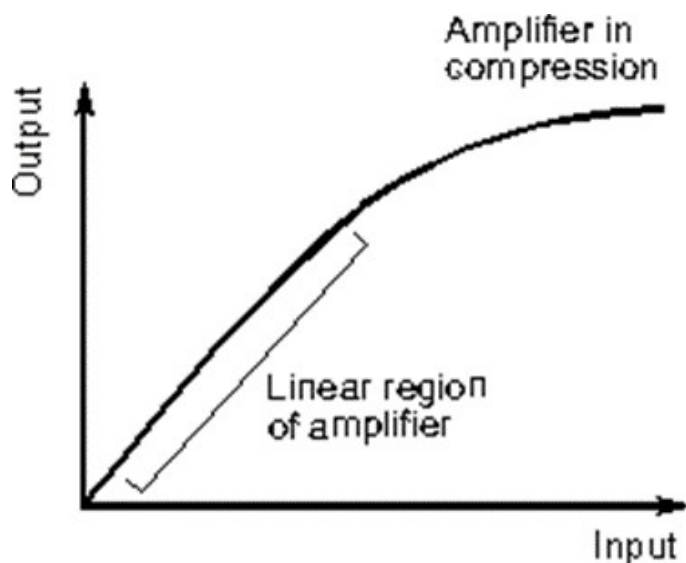
Dynamic range

Sensitivity and noise figures determine the minimum signal level receivable. The maximum signal level before problems occur is the strong signal handling characteristic. The difference is the dynamic range of the receiver.

The Lazy Eight Transverter Project Part 3 - Transverter Notes

Signal level Range.

RF amplifiers are linear only over part of their range. The supply voltage and current limits the linear range. When over driven with an input signal the output is compressed.



A Typical Amplifier Characteristic

Remember from earlier lessons that a non-linear component will generate harmonics.

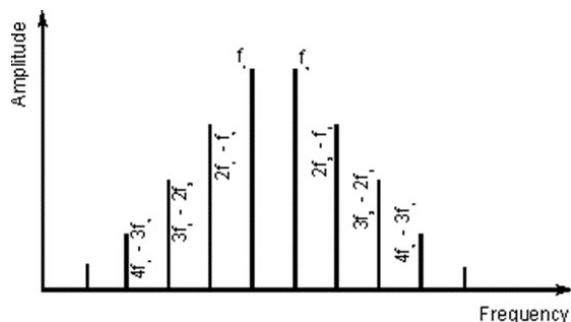
When harmonics of in-band signals mix together, inter-modulation products are formed.

Third order products

Look at this mess. Inputs at F1 and F2 generate harmonics which mix to produce.

$2F1 - F2$	$3F1 - 2F2$	$4F1 - 3F2$	etc.
$2F2 - F1$	$3F2 - 2F1$	$4F2 - 3F1$	etc.
3 rd order	5 th order	7 th order	Product

These are all odd harmonics



Murphy's Law insists that one of these harmonics will be on the same frequency as a DX signal.

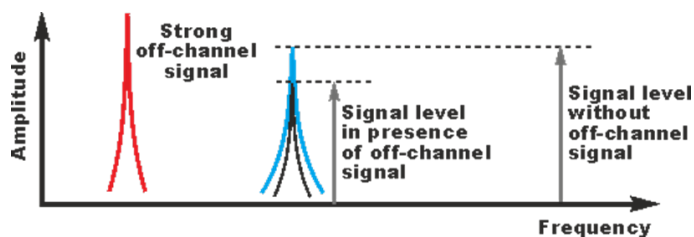
Radio receiver blocking.

This is a reduction of sensitivity which occurs when a strong signal is present blocking reception of another signal. The amplifier goes into compression and other

nearby signals are reduced in level. If a strong signal causes compression the rail supply reduces or current limits depending on the design. This reduces all signal gain in the amplifier.

If you are hearing a moderate signal and it reduces in strength, there may be a high-powered station nearby in frequency.

Specifications for blocking are quoted for the signal level required to reduce the received signal by 3dB at 20 kHz away.

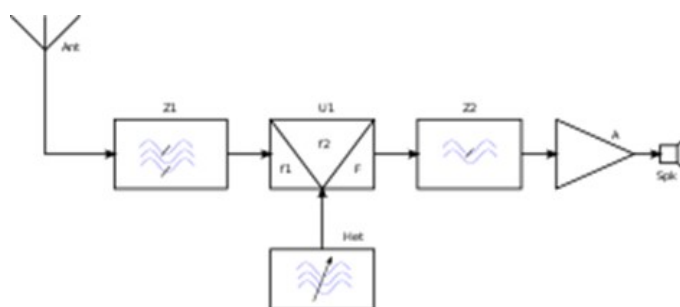


Cross Modulation

A non-linear circuit will act as a modulator. A strong modulated signal will over load a circuit and modulate a weaker modulated signal. The result is a signal with two audio components, one from each signal. So you hear the audio from one and the audio from the other in the background. This effect shows up best with AM signals.

Lets look at the direct conversion receiver, used for SSB and CW reception.

The block diagram shows an oscillator, a mixer and an audio amplifier. The band pass filter is to attenuate high level out of band signals and harmonics of the band to be received and an audio filter to select the required mixer product,



The action is the reverse of an ssb generator. The ssb signal is applied to a mixer, mixed with a local oscillator signal (crystal or VFO) and the mixer products are the sum and difference.

The Oscillator signal plus the SSB are out of range of the human ear and are filtered out from the mixer products. The audio frequency product (SSB minus the oscillator) is filtered further if a CW response is required and then amplified to drive headphones or a speaker. The oscillator is called a carrier insertion oscillator CIO, when used to demodulate SSB or CW; the mixer is a product detector.

The Lazy Eight Transverter Project Part 3 - Transverter Notes

The noise figure might typically be -3dB for the filter, -6dB for the diode mixer. This is a loss of input signal of -9dB, only strong signals would overcome this and be heard. An amplifier would be placed between the filter and mixer to supply gain to overcome the mixer loss. Not before the filter as this would increase unwanted signal levels and the amplifier might be over driven by strong signals.

RF mixer & receiver overload

The ability to receive strong signals is limited by the mixer. Strong out of band signals can overload the mixer and act as a local oscillator. This results in spurious signals in the receiver.

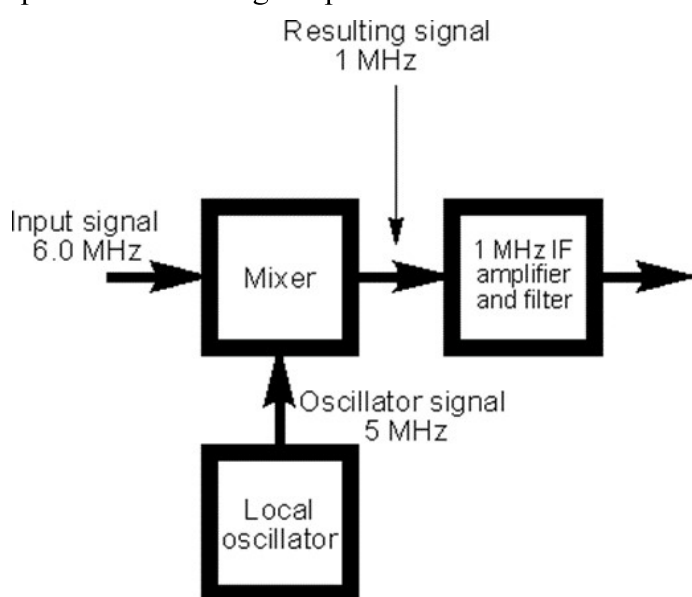
The amplifier must be able to handle strong signals without overloading, the mixer should have a high third order intercept point and be driven by a high local oscillator level. Input attenuators resistive can be inserted before the RF filter, these are usually marked atten and values given in dB. The downside of the RF attenuator is, it also works on wanted signals. The plus side is a fixed impedance for filter matching.

Receiver intercept point

If a receiver is overloaded and the intermodulation products reach the same strength as the applied signal, we call this the intercept point. It is theoretical, actual responses compress before this. The intercept point is used to specify the overload limits of the receiver.

A receiver with poor intercept performance will receive lots of signals, most of them Ghosts.

Mixers in transverter receive sections have a problem - the image response.



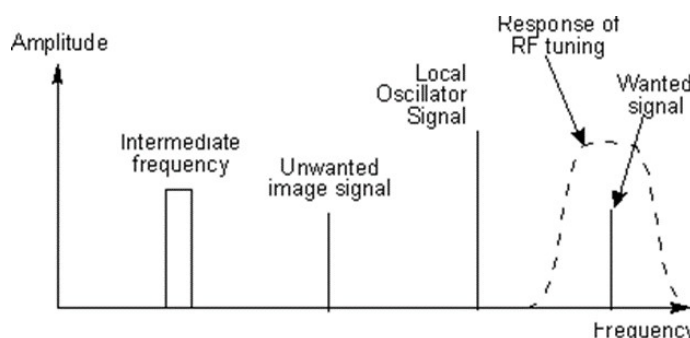
So a 6MHz signal will give a 1MHz IF with a 5MHz LO.

But a 4MHz signal will also give a 1MHz IF with a

5MHz LO.

This is the image frequency. Frequencies above and below the LO by the IF can be received at the same time.

A tuned RF stage may reject the image but at low IF very selective filters are required. Less stringent filters can be used if the IF is high and the image is therefore well spaced from the required frequency.



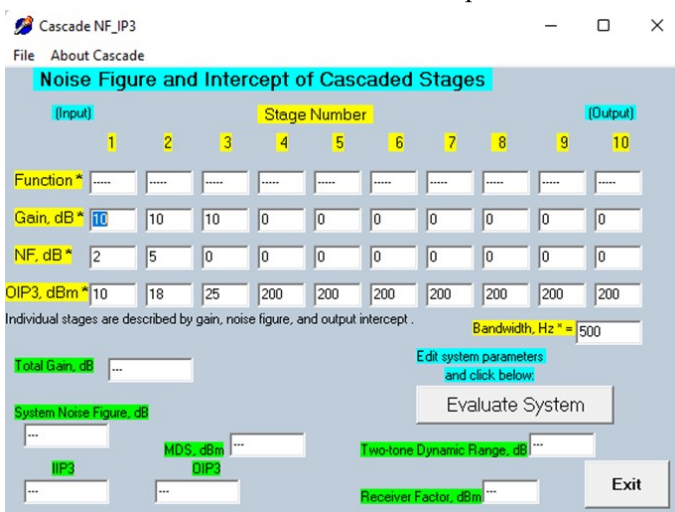
Use a Tuned Filter to Remove the Image Signal

Poor image rejection results in interference in the receiver. The image goes into the IF and can obliterate the wanted signal and / or upset the AGC. An Image signal can be detected by the listener as it Tunes in the reverse sense to the wanted signal.

IF Breakthrough, the IF amplifier is a radio receiver in its own right and will receive any signals on or near to the IF depending on its selectivity. Shielding is often required to prevent this.

In our case the 10M band is the IF and the transceiver the rest of the receiver. The filter and mixer losses must be arranged with amplification to prevent signal loss and the previous problems.

Adding and subtracting section gains and losses to obtain a satisfactory balance is not for the lazy. So a program by W7ZOI is used. Available free in the ladpac suite.



Philip Pollock - EI8JT
philipscpollock@gmail.com

Understanding Solar Parameters - Eric F4FAP

SOLAR WEATHER DATA UNDERSTANDING MAIN SOLAR PARAMETERS

Tks to Niall F9VCV for english proofreading.
Main sources : NOAA, observatoire de Paris, CNRS, SolarHam, ARRL, eHam, CQ mag, SpaceWeather, HamQsl, N0NBH, etc.
By Eric Cordier F4FAP - v1e, sept 2020 • Available on radio-club F4KIO web pages, Rennes, France: ara35.fr

SUN FACTS: 4.7 billion years old • Life expectancy 5 billion years • 333.000 times the earth's density • 1.303.000 times bigger than earth • 3/4 hydrogen and 1/4 helium • Burns 620 million tons of hydrogen per second • Sun light time to the earth ≈ 8 min, sun particles 2 to 4 days • Produces 400 million billion joules every second • Magnetic field 5000 times the earth magnetic field • Rotation: 28 days at the equator, 37 days at the poles • Surface temp 5500°C, 15.000.000°C in the core • Accounts for 99.8% of the solar system's mass • Average solar cycle: 11 years (cycle 25: 2020-2031).

EARTH FACTS: 1/109th of solar diameter • 150.000.000 km away from the sun • Around the sun at 30 km/sec.

A, K-or- Ap, Kp -or- A Index, K Index ► PLANETARY (EARTH) GEOMAGNETIC INDEX

Effect of solar wind particles on the Earth's magnetic field (EMF) • Kp - horizontal component of EMF measured over 3h (updated 8 times/day) • Ap - EMF instability level measured over 24h (updated daily) • Correlated with Bz • A high Kp indicator associated with a low Ap indicator = sudden disturbance in the EMF.

Kp	AD	1	3	Quiet	G0
		2	7	Unsettle, degraded	
		5	48	Minor magnetic disturbance • Auroras at high latitudes (> 65°)	
		6	80	Moderate magnetic disturbance • Aurora at latitudes ≥ 55°	
		7	140	Strong magnetic disturbance • Fluctuating HF propagation • Aurora at lat ≥ 50°	
		8	240	Severe magnetic disturbance • Possible HF black-out • Aurora at lat ≥ 45°	
		9	400	Extreme magnetic disturbance • Probable HF black-out • Aurora at lat ≥ 40°	

Geomagnetic storm ► DISTURBANCE OF THE EARTH'S MAGNETIC FIELD

Statistics (days) during average solar cycle (11 years): G1 = 900, G2 = 360, G3 = 130, G4 = 60, G5 = 4.

SN -or- SSN ► SMOOTHED SUNSPOT NUMBER

Act on ionization of F-layers • > 97% correlation with SFI • Daily updating • Theoretical radio band accessibility according to current SN and SFU (SFI) levels - source N0NBH.

0	Minor HF propagation	1 SFU (Solar Flux Unit)	60 SFU (SFI)
	☉ SN 10-35, SFU 70-90 : possibly up to ≈ 20 m ☉ SN 0-10, SFU 64-70 : possibly up to ≈ 40 m		
100	Moderate HF propagation		
	☉ SN 70-105, SFU 120-150 : up to ≈ 10 m ☉ SN 35-70, SFU 90-120 : up to ≈ 15 m		
> 100	High HF propagation (possible R3 to R5 radio blackout depending on conditions)		
	☉ SN 160-250, SFU 200-300 : up to ≈ 6 m ☉ SN 105-160, SFU 150-200 : up to ≈ 10 m, 6 m openings		

SFI -or- SF -or- F10.7 index ► SOLAR FLUX INDEX ON 10.7cm/2800 MHz

Good indication of F2 layer ionization: the higher the SFU, the higher the ionization and MUF (Max Usable Frequency) are • Correlation with : X-ray stream, 304A (≈ 110 SFU) and SN (>97%) • May exceed 300 SFU (june 1991 record of 55000) • Updated 3 times a day.

X-Ray -or- XRY ► X-ray stream

Influence mainly the D layer • Effect of solar flares • Updated 8 times a day • Measurement by GOES satellite • Statistic number of occurrences during an average solar cycle (11 years): M1 = 2000, M5 = 350, X1 = 175, X10 = 8, X20 = 1.

A1 → A9	<10 ² Watt/m ²	Nil to low incidence on day side	---
B1 → B9	≥10 ² <10 ⁴ Watt/m ²		
C1 → C9	≥10 ⁴ <10 ⁶ Watt/m ²		
M1 → M9	≥10 ⁶ <10 ⁸ Watt/m ²	Minor to moderate absorption (black out) on day side	R1 to R2
X1 → ∞	≥10 ⁸ <10 ¹⁰ Watt/m ²	High to extreme absorption (black out) on day side	R3 to R5
Super X	≥10 ¹⁰ Watt/m ²	Possible correlation with SN -and/or- high SFI	

► RADIO BLACK-OUT

Caused by X-ray stream • Statistics (average black out days) during average solar cycle (11 years): R1 = 950, R2 = 300, R3 = 140, R4 = 8, R5 <1.


Ptn Fbx -or- Pf ► RADIATION LEVEL

Density of charged protons present in the solar wind • Influences mainly the E layer • 5 min averaged • Measurement by GOES satellite • Statistics in number of occurrences during an average solar cycle (11 years): S1 = 50, S2 = 25, S3 = 10, S4 = 3, S5 <1.


S1	MeV measured (Mega-electron-Volt)	> 10 PFU	Minor solar radiation
S2*		> 100 PFU 10 ²	Moderate solar radiation
S3*	10 MeV = 1 PFU (Proton Flux Unit)	> 1000 PFU 10 ⁴	High solar radiation • Degraded polar area HF propagation
S4*	*As of S2, health risk at high altitude and high latitudes (source NOAA).	> 10000 PFU 10 ⁶	Severe solar radiation • Possible polar area HF black out
S5*		> 100000 PFU 10 ⁸	Extreme solar radiation • Probable polar area HF black out

Understanding Solar Parameters - Eric F4FAP

Bz -or- MAG ► INTERPLANETARY MAGNETIC FIELD Force and direction of interplanetary magnetic field (IMF - solar magnetic field which is dragged out from the solar corona by the solar wind flow), 50 nT to -50 nT (nano Tesla) • Positive value: same direction as earth magnetic field (to the north) • Negative value: as of -10nT, marked weakness of the Earth's magnetosphere in the solar wind (south trend) • Unpredictable • Hourly updated.


 The interplanetary magnetic field (IMF) has three components: Bx, By and Bz (three-dimensional field). Bz, which represents the north-south direction of the IMF (thus perpendicular to the plane of the ecliptic), is one of the most important parameters for the auroral activity on Earth, measured by the ACE satellite. A negative Bz index indicates that the IMF is "in phase" with the Earth (because their polarities are opposite), facilitating the penetration of solar wind particles into the Earth's atmosphere. These particles are then transported to the lines of the Earth's magnetic field where they collide with oxygen and nitrogen atoms, radiate and emit light, usually in polar areas.

304A ► ULTRA VIOLET Relative intensity of ultraviolet solar radiation over the wavelength of 304 angströms (30,4 nm) • Responsible for ≈ half of the F-layer ionization (the other half is due to the protons and electrons of the solar wind, as well as the X-stream) • Partial correlation with SFI (≈ ± 110 SFU) • Average solar minimum value ≈ 134 • Average value at the solar maximum ≈ 200 or more • « @SEM » indicates a measurement of the SOHO satellite • « @EVE » indicates a measurement of the SDO satellite • Hourly update.


 Approximately 5% of solar electromagnetic energy is emitted as UV radiation, classified according to its wavelength: UV-A (400-315 nm), UV-B (315-280 nm) and UV-C (280-100 nm). The above measurement (304A or 30,4 nm) is classified as XUV (Extreme UV Radiation). NOTE: the EVE instrument on board SDO is newer (2010) and more sensitive to changes in intensity than the SOHO SEM instrument (1995). Moreover, these satellites do not have the same position in relation to the sun.

Ef -or- Efc Fx ► ELECTRON FLUX Density of charged electrons present in the solar wind • Influences mainly the E layer • The higher the value (given in number of particles/ cm².s.sr), the more the ionosphere is influenced • Sensored by GOES satellite • Averaged over 5 min.

SW ► SOLAR WIND In km/sec • Varies in speed and temperature depending on solar activity • Average speed: ≈ 450 km/sec • Influences the ionosphere in proportion to its velocity • Measured by satellite • Hourly update.

 The solar wind is a hypersonic flow of low-density burning plasma, consisting mainly of ions, protons, electrons and helium nuclei. These charged particles are ejected from the upper atmosphere of the sun. The flow varies in speed and temperature over time and with solar activity. The satellite measurement provides a delay of 15 to 60 minutes, depending on the solar wind speed, before the earth collision.


Aur Lat ► AURORA LATITUDE Lowest onset latitude calculated by the Ovation model • Value in degrees of latitude (°) : from 67,5 to <45 • Hourly update.

 Some sites provide a measurement in GW (Gigawatt) of the Earth's upper atmosphere, the amount of electrical energy transferred by the solar particles necessary for the appearance of the aurora. Probability calculation obtained via the Ovation model (with satellite measurements) ranges from 20 GW (very low) to >100 GW (very high). Updated every 5 min.


GeoMag Field ► GEOMAGNETIC FIELD Simplified indication based on the "Kp" index that indicates the state of the Earth's magnetic field • The highest indications may be the cause of a HF blackout and/or aurora (see Kp) • 3 hours updating.

Sig Noise Lvl ► SIGNAL NOISE LEVEL Calculated value • Indicates the value in units of "S meter" of the noise level generated by the interaction of the solar wind with the terrestrial geomagnetic activity • NoRpt means « No report » • Updated every 30 min.


MUF ► MAXIMUM USABLE FREQUENCY 0 to 100 MHz value • Gives the MUF from one of the 11 measurement sites in the world (the site from which the measurement comes is usually indicated) • NoRpt means « No report ».

 The MUF does not guarantee success in HF communications. A rule of thumb is to use a coefficient of 80 to 90% (or less) of the MUF. Moreover, the MUF of one site is not representative for the whole world.


CME ► CORONAL MASS EJECTION Gives a forecast of the UTC date and time of the Earth impact of a solar flare • Graduated color according to severity : green→yellow→red • Updated by NOAA/SWPC when a CME is detected.


 CMEs are plasma bubbles produced in the solar corona, often linked to a solar flare. These huge clouds (up to several tens of solar rays), made up of hundreds of millions of tons of electrons and protons, superimpose themselves on the solar wind, travel through space (100 to 2500 km/sec) and, if they cross the earth, disrupt the Earth's magnetosphere. In addition to the appearance in the sky of aurora borealis or southern lights, these phenomena can cause power failures, degrade or interrupt radio transmissions, damage or destroy satellites, cause failures on board aircrafts and/or subjects persons on board to excess radiation, etc.

► PROTON DENSITY Measured in number of protons per centimetre² (p/cm²) in solar wind: <10 = weak, 10 to 20 = sparse, >20 = dense to very dense • Correlated to Ptn flux (-or- Pf) and SW • Measurement done by satellite • Updated every 10 to 30 min.

 Protons are also galactic (extra-solar) and account for about 90% of the total particle flow. These protons often have a higher energy and a much more uniform and stable intensity than those from the Sun (usually associated with CMEs).

► SUN SPOTS 8 classes of sunspots according to their lifetime, evolution, complexity, structure, and polarity.

Four main spot types:		
- Class -	- Description -	- Influence/impact -
 The number of sunspots is counted daily, generating the "Wolf International Relative Number" which allows us/one to evaluate the activity of the sun in addition to the measurement		
α - Alpha	Inorganic unipolar magnetic field.	Low threat
β - Beta	Bipolar magnetic field with simple polarity division.	C class X stream, possibly M.
γ - Gamma	A complex region in which negative and positive polarities are irregularly distributed so that they cannot be classified as bipolar regions.	---
δ - Delta	Strong bipolar field between spots.	Can be very active - produces the most intense solar flares. High potential for class M to X flows.

 A few sites (among dozens of others) where to get all these solar parameters :
solarham.net • figci.com • dk0wcy.de • sunspotwatch.com • hamqsl.com

We are indebted to Eric F4FAP, for his kind permission to reproduce his pages covering the Understanding of Solar Parameters.

There are many locations giving Solar Indices such as:

<https://www.wm7d.net/hamradio/solar/>

<https://www.swpc.noaa.gov/communities/radio-communications>

<https://www.hamqsl.com/solar.html>

<https://hamwaves.com/propagation/en/index.html>

Armed with this information and using real time Propagation tools such as the Dourbes Ionogram available at: <https://digisonde.oma.be/ionogif/latest.html> and also the information gleaned from the real time propagation maps found at <https://prop.kc2g.com/>

Tracking the characteristics of Radio wave Propagation during the course of the Day/Month/Season/Year and position within the 11 year cycle is a whole new facet of the hobby.

East Leinster Amateur Radio Club - Black Sky Drill 2023

On Saturday the 27th of May the members of the East Leinster Amateur Radio Club (ELARC) conducted a Black Sky drill amongst the sunny Wicklow mountains.

Some background to the drill. A Black Sky drill is a simulation of a major extended power outage. The power outage can be either man made, such as an electromagnetic pulse, a cyber-attack on the grid or a physical attack on the power distribution network. It can also be caused by a natural phenomenon such as a coronal mass ejection similar to the Carrington event of 1849 which wiped out large sections off the early Telegraph system in the United States. Causing Telegraph stations to burst into flames. Other causes can be winter ice storms, hurricanes, or other major weather events.

These black sky events are typically very rare but have a very high impact to the electrical distribution grid.

Training Goals

This drill is a scripted, Directed Net with some specific training goals:

- Improve operator message handling skills.
- Become proficient with the use of the ELARC / IARU message handling form.
- Gain experience with directed Net operating procedures.
- Operate independently in a remote mountainous environment with battery power.
- Work efficiently under the direction of the Net Controller and Drill Coordinator.

Operator Objectives

The club members assembled for a briefing before the drill commenced. The briefing outlined a number of individual objectives for each operator:

- Stay safe and healthy during the drill.
- Maintain good situational awareness of their environment and radio equipment.
- Get on the air and stay on the air.
- Fully participate in the drill, following the directions of the Net Controller and Drill Coordinator.
- Contribute to the drill debrief and give constructive feedback with the goal of improving the club's standard operating procedures for portable operations and message handling.

Drill Execution.



From left to right, Noel EI7FRB, Ian EI4DP, Kevin EI9IVB, Dom EI5IAB, Michael EI6IRB, Tom EI5IEB, Mack EI6IVB, Frank EI8HIB

All operators moved into their pre-assigned positions, two to four kilometers from the Net Controller's location, then report back to Net Control with an initial radio check. When all operators were in position the Net Controller requested a full signal report from all stations to all stations.

This allowed all operators to create a matrix which gave



Tom EI5IEB, (Net Controller) with Noel EI7FRB at the Net's 4m Station.

them a good picture of the net coverage and who could hear whom. With this information, the Net Controller was

East Leinster Amateur Radio Club - Black Sky Drill 2023

able to assign a backup Net Controller and communicated that to all stations.

The drill formally began just after midday with the Net Controller requesting operators to send pre-scripted call-ins to the Net with challenging messages requiring the use of phonetics and technical language. The drill continued with several sets of messages being transferred to and from the Net Controller whilst ensuring the proper transcription of messages using the standard ELARC / IARU Message Handling form. The main Net was on 4 meters, using minimal power and carefully phrasing the messages so that there could be no confusion by any station overhearing the Net.

A parallel Net was being operated by the Drill Coordinator on 2 metres which facilitated welfare and safety



Michael EI6IRB, demonstrated the effective use of an almost 50-year old Clansman 352



Frank EI8HIB, (Drill Coordinator) at the 2M Station

checks of operators. It also challenged the operators and Net Controller with parallel tasks to complete during the drill, so adding an additional level of stress to the main 4-meter net.



Mack EI6IVB operating his 4m station

The parallel Drill Coordinators net also facilitated some coaching and advice to operators at the remote stations.

At one point in the drill a simulated Net-Control station failure was executed, the Back-Up Net Controller realised the break in the Net and called the Net Control station. On receiving no reply, they took control of the Net smoothly and calmly maintaining continuity of the Net. A great example of situational awareness and the experience and skills required to step in and maintain an effective Net.



Dom EI5IAB checking in with the Drill Coordinator on 2m

Drill Closure and Debrief

The final message was passed at 13:47 and the Net-Controller called the drill to a close at 13:50. With all operators returning to the Net-Control location.

After a cup of coffee and a chance to catch up with other club members, the Drill Coordinator conducted a short debriefing with some great feedback from all members. We learned a lot and succeeded in maintaining the Net to a high level of operation, with all club members continuing to operate effectively for almost two hours on portable power in remote locations.

The Net-Controller did a fantastic job of running the Net

East Leinster Amateur Radio Club - Black Sky Drill 2023

under challenging conditions with some interesting surprises thrown in by the Drill Coordinator.

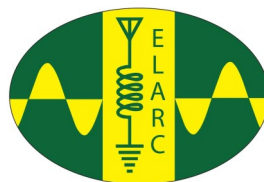
We finished the day with a wonderful barbeque laid on by our gracious host for the day. After swapping SOTA and POTA stories and discussing the next club trip, we gradually dispersed in the late afternoon.

Feedback from all club members was positive, the drill had achieved its training objectives, we all stayed safe and well, we stayed on the air, maintained good operating discipline and copied all messages with near 100% accuracy.

Future Events

ELARC would encourage other clubs or groups of operators around the country to run similar training exercises / field days / drills, to improve their ability to operate with independent power in difficult conditions. We certainly believe that the club members learned a lot on the day and had a bit of fun in the process.

We would be happy to advise and assist any club or group of operators interested in conducting a similar event. Or if your interested in participating in a future ELARC training event, please contact us via email at mckeownfg@gmail.com



East Leinster Radio Club is group of friends interested in all things Amateur Radio, especially Portable and SOTA.

The Club really got started over the Lockdown with regular group Zoom calls. During the Lockdown we spent a lot of time-sharing home-brew projects and running classes in preparation for the HAREC exam, and I'm delighted to say we had two members passing and gaining their Amateur Licence this August. We are in the process of setting up a simple, no frills, website which we'll build over time. So please don't come here expecting a lot of detail. We're spending our time getting out and operating rather than building websites. But we will put in some contact info and a brief Intro to the Club very soon. At the moment we're all based in the Dublin / Kildare region and really looking forward to doing a few club field days and club home-brew projects. Hope to chat with you all on the air

Frank EI8HIB (East Leinster Radio Club Secretary)

Join the G-QRP Club

The G-QRP-Club is an organisation run entirely by volunteers to promote Low Power Radio (QRP).

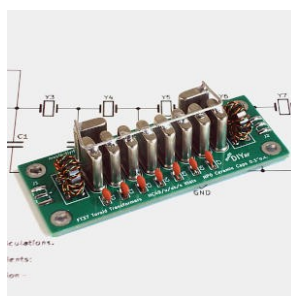
The G-QRP CONVENTION: 2nd - 3rd September 2023

The 2023 Convention will be Saturday 2nd and Sunday 3rd September at the Harper Adams University Campus, near Telford, TF10 8NB. More information to follow as plans develop.



The quarterly magazine, SPRAT, provides interesting reading. Articles covering Antennas, Test gear, Transmitters and Receivers of varying complexity. More information: <https://www.gqrp.com/index.htm>

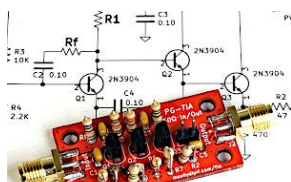
Membership Service include a QSL Bureau, component supplies books and reprints



8-Pole QER Crystal Filters

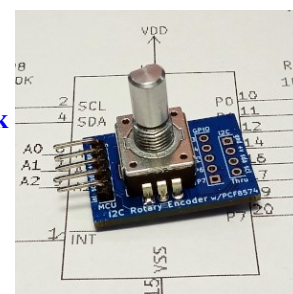


TIA-AGC IF Amplifier



ematic follows Hayward W7ZOI and Kopski K3 termination-insensitive IF amps (<http://w7ziched.amplifier.pdf>). This version is for a single directional amp. This makes it usable in non-stems or paired together for bi-directional i

ADE-1 Double Balanced Diode Ring Mixer



12C Rotary Encoder

<https://mostlydiyrf.com/>

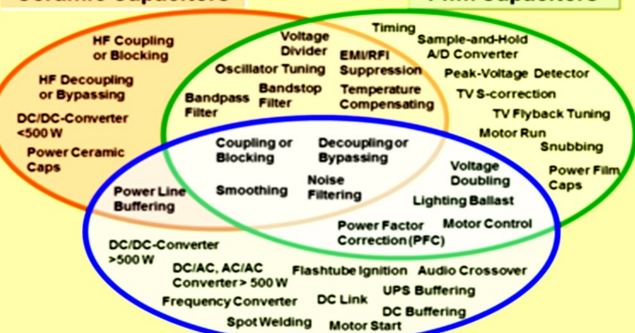
Check out our site:

There is more coming so subscribe to be alerted of our new products

Overlapping Applications of Capacitor Types

Ceramic Capacitors

Film Capacitors



Aluminum Electrolytic Capacitors

Galway Radio Experimenters' Radio Club

Our Club Monthly Meetings

The Galway Radio Club met in the Menlo Park Hotel for the monthly club night. It is generally held on the first Monday of every month, except if it is a Bank Holiday in which case, we meet on the second Monday of the month. We also support a virtual presence via. Jitsi (<https://jitsi.org/>).

It generally a well-attended night with members being both physically and virtually present.

Focus

The focus of our monthly club night is, as a rule, all things Ham Radio is about – learning about new things, sharing information on what works (or doesn't work), showing new (or old) pieces of equipment and giving presentations/demo's where we can. Any "club administration" is handled separately by our committee and only bring to the Monday night meeting anything that the club members need to be made aware of. Of course, Monday night club members can also raise questions/concerns/issues etc. to the committee.

Last Club Night

Last club night (08-May), was a good night – we had a good number of members present and we had 3 goods presentations.

Upcoming Events

From there we quickly covered the other upcoming

Date	Event
03-June	Galway Regatta
21-July	Joyce Country Challenge

events including the upcoming HAM RADIO in Friedrichshafen, Germany on 23-25 of June. and then moved on to presentations by Enda, Paul and Aoife

V26EI DXpedition to Antigua & Barbuda

Enda (EI2II) gave a great presentation on the Irish DXpedition which went to Antigua & Barbuda earlier this year. This was the same presentation as given at the IRTS Rally on Saturday 29-April before the AGM. Enda went thru' the original plans, and how they (11 members) had to change location because of a 1 foot boat length and politics problem 😊 Even with that challenge, the trip was successful with the DXpedition making a massive number of contacts (54,549) with the following breakdown (according to Clublog):

CW: 31.16%

Phone: 35.09%

Data: 33.75%

From the 24-March to 02-April, the 54,549 QSO's are spread over 170+ "entities" which includes countries, islands etc. - what an achievement!!!!

Ireland ranked up there compared to other countries (Italy, North America etc.) with a lot of contacts being made which was great to see – we were "holding our own" was the comment.

It was a great demo and sparked several questions and comments!!

The above does not do any justice to the presentation at all, and if you get a chance to have Enda attend any club events, it is worth viewing that presentation!!

The Hunt for V26EI

This was not so much a presentation, but more a review of a Radio Journal that Paul (EI5IPB) kept in his Hunt for

V26EI using his ICOM IC-7300 rig and a locally installed version of TiddlyWiki. The hunt started on March 25th and finished on April 1st all on FT*. The journal showed daily screen captures of PSK Reporter showing how far his signal was being received across different bands, how close it was getting to V26EI (even going over their head 😊) as well as learnings along the way such as 2 important rules: Don't mess with any settings unless it is really, really necessary. See Rule 1.

At the end of the day, success was achieved by patience and paying attention to how V26EI were transmitting (a light bulb moment towards the end) - contact was made on both 20m and 17m within a very short period thereafter.

V26EI was caught after 7 days of hunting!!!

As a side note, TiddlyWiki (see <https://tiddlywiki.com/>) was shown again as a tool that can not only be used for note taking, but also as a Journal - being able to capture screenshots etc. to track progress over several days.

International Marconi Day

Aoife (EI8HOB) gave a presentation about the Galway Radio Club and its participation in the International Marconi Day Event. This took place on Saturday April 22nd and we travelled to Tully Cross, north of Letterfrack for the event.

In 1911, Marconi set up a second pair of antennas in Letterfrack - one antenna pointing to North America, the other pointing to the main station in Clifden. Messages would be sent in one direction for a number of hours, and then stopped to receive messages for a few hours, allowing messages to be sent to and received from different directions. More can be found with a Google Search.

We picked Tully Cross because they had a community centre there that was available for our use, and it is in a quiet but very beautiful part of the country. Aoife's presentation showed the setting up of a 40m end-fed antenna, along with 2 radios - the club rig which was an ICOM IC-756 PRO III and Pauls (EI5IPB) ICOM IC-7300 rig. Switching between the single antenna was done manually. The IC-756 PRO III was used for SSB communications, while the IC-7300 was used for FT8.

Aoife showed the contacts made, along with where they were located across the globe, which made the trip successful. SSB propagation was not great for us during the late night or day so most contacts were made on FT8.

The trip was also used to learn more about FT8, and some of the different software WSJT-X, JTD-X and MSHV used for FT8.

At the end of Aoife's demo, reference was made to how Aoife did some SSTV work with her tablet and the Club ICOM IC-756PROIII without the need for any cables. All was done using the microphone input of her tablet and the speaker of the ICOM rig. Amazing!! This is also going to be the subject of a demo in the new few months.

It was also a time to celebrate - this was the first time Aoife was able to both receive and transmit using FT8 and she made a number of QSO's on this mode - so a great success for Aoife!

AOB

We have a presentation lined up about the St. Patricks Day event, but this will have to wait for another day.

And that was the end of the night!

Our next club night is 12-June.

Shannon Basin Radio Club



Barry (Elphin Windmill), Daniel EI8ICB, Fergus EI6IB, and Tom EI4HCB outside the visitor centre.

Mills on the Air

The club was active again over the weekend of May 13th and 14th as part of the annual Mills on the Air event. The station location this was again located in the beautifully restored Elphin Windmill in Co. Roscommon. Over 300 years old, this is the oldest windmill in Ireland and the only one of its kind in the West of Ireland. The distinctive thatched-roof building can't be missed in Elphin.

With fantastic weather and sunlight streaming into the shack, the club logged over 150 QSOs on HF and 2m using the callsign EI2EWM. We were especially delighted that new club member, Daniel EI8ICB, was able to enjoy many hours of operating as EI2EWM as part of the team talking to operators across Ireland, UK, France, Germany, and the Netherlands.

Construction Project – Off the Grid Networking

Initiated by Marty EI2IAB, members of the club have embarked on an equipment construction project to experiment with a fully decentralised off-the-grid chat-room system using ham radio. The Terrestrial Amateur Radio Packet Network (TARPN) is a project based around packet networking. It's a fun project that combines construction, programming, antennas, and system building.



Tom EI4HCB inspecting the fully restored mill mechanisms.

Unlike Packet from the 1990s era though, the TARPN project is not just recreating that problems like congestion and inconsistent performance that were common during that time with packet. TARPN is designed to thrive when fully saturated and can handle fully occupied links. One of

the first items on the soldering bench will be a new terminal node controller (TNC) board called the NinoTNC (see <https://tarpn.net/t/nino-tnc/nino-tnc.html>).

This is a capable board supporting seven different transceive modes for VHF operation and four modes for HF operation. This means it is suitable for use on 300baud HF Automatic Packet Reporting System (APRS) as well as higher baud rate VHF usage. One interesting new addition is the introduction of error correction; this is/ not possible with the older era 1200/9600 baud packet.

In practical terms, this should result in a 4dB improvement in receiver signal to noise ratio. Some of our newer club members are active packet enthusiasts in the midlands area of Ireland and we look forward to learning from their expertise as we continue with the project.



Daniel EI8ICB was very busy on the mic over the weekend operating at EI3EWM.



It's impossible to miss this striking and beautiful windmill in Elphin

Joining Shannon Basin Radio Club

Shannon Basin Radio Club's very active membership continues to grow, and activities range from construction, special events, youth activities, contests, and all mode & band radio-related operation. If interested in learning more about the club or becoming a member, you can contact the club by email to admin@sbrc.ie or find more information on the club's website at www.sbrc.ie. You can also find information and updates about the club activities via Facebook, Twitter, and Instagram.

Our Next Meeting



The Mayo Radio Experimenters Network will hold their next club meeting on Wednesday evening 7th of June at 9pm in the Breaffy House Hotel, Breaffy Co. Mayo. Everybody is

welcome to come along for the evening.

The IRTS News Bulletin is read on Sunday at 9pm by a club member. Everyone is welcome to call in and give a signal report on the reception of the bulletin.

Galway VHF Group News

Galway VHF Group provided Communications for the Galway Regatta 2023 on June 3rd. The weather was fabulous for the entire day with hot sunshine and a mild breeze along the Regatta Course on the River Corrib. There was a huge entry of crews this year which meant that the river was particularly crowded with crews racing, Crews finishing and taking their boats off the water and crews going on the water to head for the start line for their races.

This was very well monitored and controlled with no accidents during the day apart from the occasion boat carried into the reeds by the breeze. Safety boats were strategically placed to deal with such problems, thus averting any serious incident. The organisation ran like clockwork with the races running on time for the duration of the event. Check out the Ham Radio Ireland Facebook Page where drone footage of crews rowing down the river may be found.

We have two more events to cover this year: The Castlebar 4 Days Walking Festival in June and the Galway Walking Club Marathon Walk in August.

In the mean time members will be taking gear out portable on both HF and VHF now the weather is more suited to such operations. We will also be experimenting with kite supported Long Wire antennas and EFHW antennas. It is time to blow the dust of the portable gear and ensure that it is working 100%.

QRP operation is on the cards too, with the use of the ICOM-705 and an Alex Loop Antenna and possibly the Buddipole System.

We are spoilt for choice of locations to operate from, between Connemara, The Burren, seaside locations along the Galway Coastline and if all else fails we have the UCHG Sports ground along the banks of the River Corrib, the hills in Moycullen and Cappagh Park near Barna. Perhaps even a trip to the Aran Islands could be on the cards as well.

Bangor & District Amateur Radio Society



54th Annual Radio Rally

Visit our Facebook page for map, and last-minute news.

Usual Traders including

- ▶ **P&D CB, Amateur Radio Supplies**
Peter has all types of amateur radio, cb radio, pmr radio, shop radio, and motorbike intercoms in stock.
- ▶ **Test & Radio Equipment**
Brian has loads of hardware and cables at rock bottom prices.
- ▶ **Alan Weise**
Alan has new and used radios, components and test equipment. *Billy Goat's Stuff*
- ▶ **Bring & Buy**
Do you have surplus equipment? Bring it along.
- ▶ **Worked All Britain**
Ian & Esther WAB G10AZA, G10AZB



RSGB QSL Bureau and membership stand, meet the Region 8 Representative.

SATURDAY 17th June 2023

Ballygilbert Presbyterian Church Hall



376 Belfast Rd, Bangor BT19 1UH

Good parking available in church car-park and on roadside verge.

Doors open: 11.30am
Admission: £3.00

Enjoy light refreshments and chat face-to-face for a change.



BangorDistrictARS

Need directions or to book a table contact M100BR at andrewis@live.com

RADIO BUILDER



THE RADIO LAB FOR BUILDERS

All the building blocks to experiment and build radios:

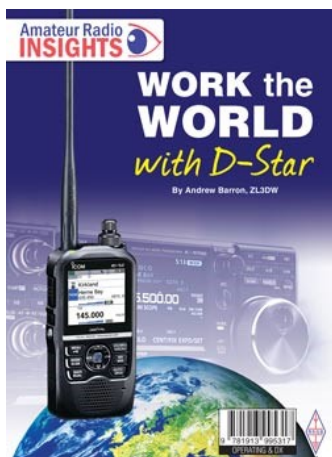
- AM, SSB and FM
- LW to VHF
- 0 – 2GHZ RF Amplifiers
- 0 – 500MHz Mixers
- Variable Gain 60dB IF amplifier
- 7 Watt Audio Amplifier
- 3 Signal Generators 8KHz to 160MHz
- Color Display
- ESP32 Controller
- Custom RF and IF Filter
- 3 Prototyping areas

Order your kit now from <https://radiobuilder.org/>

If you know stuff... you can do stuff.



soldersmoke.blogspot.com



Work the World With D-Star

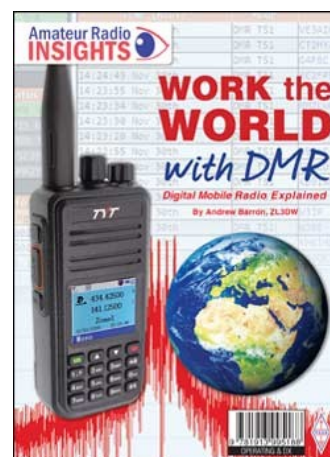
By Andrew Barron, ZL3DW

Work the World with D-Star is a practical guide that explains the steps that you need to follow to make your new D-Star radio work through your local repeater or hotspot. There are terms to discover, including dashboards, reflectors, gateways, hotspots, and Echo. Also, acronyms like AMBE+2, DR, DV, CS, and MMDVM. The book covers how to link to a reflector and what to say when you are making your first calls. If you are using a hotspot you can link to a reflector using the hotspot's Pi-Star dashboard or using the functions on the radio. Or you can use PC software or a phone app. There is guidance on MMDVM (multi-mode digital voice modem) 'hotspots' and step-by-step instructions for configuring the Pi-Star modem. Information on the D-Star data structure and the advantages and disadvantages of digital voice technology over FM, and other digital voice modes such as System Fusion, DMR, and P25 is also discussed. Work the World with D-Star even includes programming instructions for some popular Icom D-Star radios such as the ID-52A, ID-51A +2, IC-705, and IC-9700. As always, not forgotten is Andrew's guide thoughts on "which is best," and "what should I buy?"

Work the World with DMR

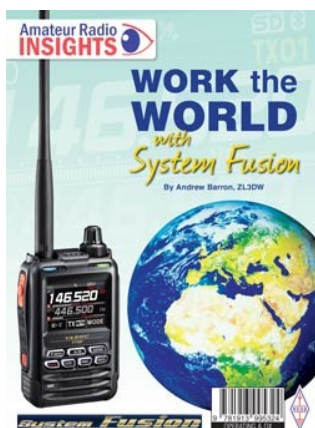
By Andrew Barron, ZL3DW

The Work the World with DMR practical approach explains the steps that you need to follow to make your new DMR radio work on your local repeater or hotspot, and for worldwide contacts. Amateur Radio DMR is not as simple as entering a couple of frequencies and setting a CTCSS tone the way you would for an FM radio. So, you can expect a steep learning curve but of course that's where this book will be the most helpful. You will discover lots of new terms including dashboards, zones, receive groups, colour codes, code plugs, hotspots, Parrot, talk groups, and time slots. Also, acronyms like MMDVM, CPS, IPSC2, DMR-MARC, TGIF, and DMR+. MMDVM (multi-mode digital voice modem) 'hotspots' are very popular accessories and there is information here about their uses and configuration. You will also find coverage of duplex hotspots and the perhaps more familiar simplex hotspots, including a section on how to assemble a hotspot from a kit, a Raspberry Pi, and an SD card. There is even step by step instructions for configuring the Pi-Star hotspot operating system.



Work the World With System Fusion

By Andrew Barron, ZL3DW



System Fusion and Wires-X are exclusive to Yaesu. Although you have to use a Yaesu radio to access Yaesu Wires-X 'rooms' anyone can access thousands of YSF and FCS reflectors using a hotspot, a DV dongle, or a non-Yaesu repeater. Many of these reflectors are in turn linked to DMR talk groups, D-Star reflectors, Wires-X rooms, and other digital voice modes.

As usual Andrew explains in Work the World with System Fusion the base technology from the C4FM (continuous 4-state frequency modulation) which is similar to the 4FSK modulation used by DMR and the GMSK modulation used for D-Star. The DN digital narrow mode and what happens when you press the Wires-X button. For example, if you are connected to a genuine Yaesu repeater or a PDN or HRI-200 Wires-X node, the search function on the radio will list the available Wires-X rooms. If you are using a hotspot, multi-mode repeater, DV dongle, or non-Yaesu repeater, the search function will list YSF and FCS reflectors. A powerful set of features indeed. There is much more besides in this book, with using the various reflectors explained, alongside Hotspots, Troubleshooting and there is even advice on 'What should you buy'.

DV SCOTLAND PHOENIX WEEKLY NETS



MONDAY NIGHT NET
8PM TILL 9.30PM UK

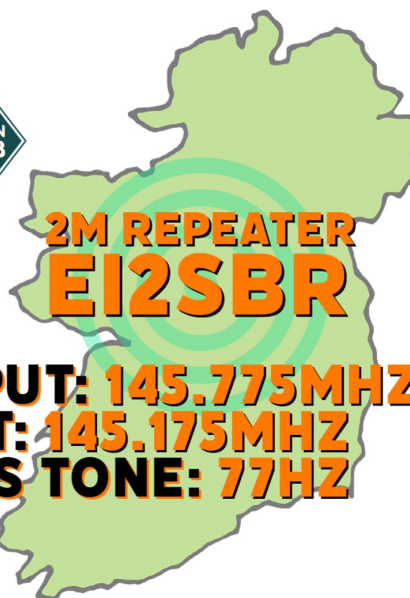
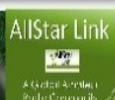
SATURDAY NIGHT
COAST TO COAST NET
9PM TILL 10PM

STATIC ON TG 23555 & 23556



HAMSHACK HOTLINE : 94110

HAMS OVER IP : 25001



OUTPUT: 145.775MHZ
INPUT: 145.175MHZ
CTCSS TONE: 77HZ



Handmade Ham Radio Gadgets



Contact : 0877775249
EI9GWB Arek

Drop by our Online SolderSmoke Store



<https://www.cafepress.com/soldersmoke>

SOLDER SMOKE THE PODCAST



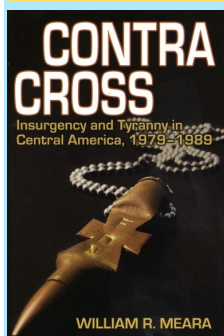
**Serving the world-
wide community of
radio and electronic
homebrewers**

Host - Bill N2CQR

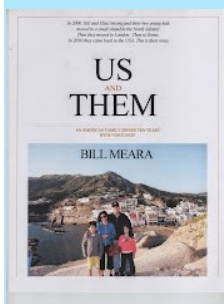


Co Host - Pete N6QW

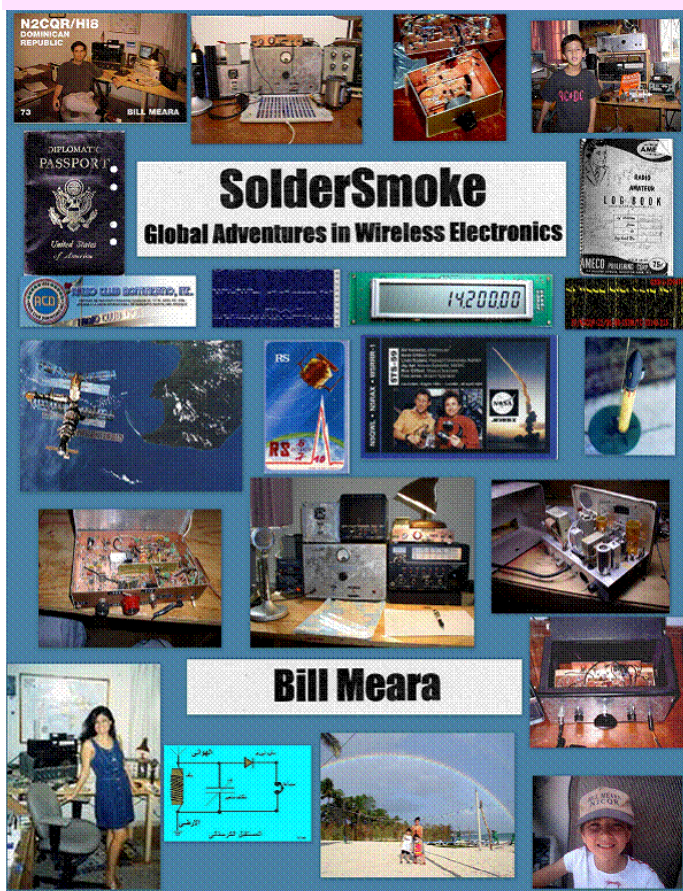
<https://soldersmoke.blogspot.com/>



A journey through the Central American wars of the 1980s as seen through the eyes of a young American officer who worked on both sides of insurgency in the region: In El Salvador Bill Meara supported efforts to defeat insurgents; with Nicaraguans he worked to keep an insurgency alive. One of very few Americans to see both sides up close, he takes readers into his world as an advisor struggling with cultural differences and human rights violations while trying to stay alive in murderous El Salvador. We join him on dangerous helicopter rides into contra base camps on the Honduran-Nicaraguan border and into a U.S. Embassy under attack. From Special Forces school at Ft. Bragg to Joan Baez's back-stage party in Managua to a contra POW camp deep in the jungle, we get a taste of Meara's world up close.



What happens if you take an American family and send them to Europe for ten years? In the summer of 2000, Bill and Elisa Meara, accompanied by 2 year-old Billy and 4 month-old Maria, left their home in the suburbs of Washington, D.C. and moved to the Azores. There they experienced the highs and lows of diplomatic life on a small distant island. After three years in the Azores, they spent four years London and three years in Rome. Overseas they lived in two houses and two apartments, went to five schools, used four different health care systems, experienced one earthquake, 9-11, the terrorist attack on London, tea with the Queen, the election of Barack Obama... and all the ordinary things that families go through. They lived mostly with the locals, learned Portuguese, Italian, and a bit of Cockney, and made many friends (foreign friends!) They returned to the United States in 2010 with a changed view of the world. This is their story



If you know
stuff... you
can do stuff.



soldersmoke.blogspot.com

Books are available from the
Lulu Website:

<https://www.lulu.com/>



KANGA PRODUCTS

Kits and Parts for the Radio Enthusiast

Morse Tutors

ATU and Dummy Loads

QRP TX, RX and Audio kits

<https://www.kanga-products.co.uk/>

Walford Electronics

We are suppliers of electronic kits, with very detailed instructions, for home construction, using mainly analogue circuits which are often used in simple Amateur Radio equipment.

You can choose from [Simple](#) projects for beginners, or slightly more advanced [Intermediate](#) ones, right up to our [Advanced](#) projects for skilled constructors, and of course there are also many [Accessories](#)!

Get in Touch

Walford Electronics Ltd.
Vedal House, Vedal Drove, Long Sutton,
Langport, Somerset TA10 9FB
e mail electronics@walfords.net phone
0044 (0)1458 241103

Shannon Basin's Automated Stations

Sliabh Bán Repeater O/P: 145.775 ,I/P :145.175, CTCSS 77Hz

Roscommon Multimode Digital Gateway EI2BED 144.8625 MHz

Current Systems Active in Galway

70cm DMR Repeaters

EI7RHD I/P 430.450 O/P 439.450 CC1

EI7LRD I/P 430.475 O/P 439.475 CC1

EI7AKR I/P 438.425 O/P 430.825 CC1

EJ7IBD I/P 430.500 O/P 439.500 CC1

Yaesu Fusion Repeater

EI2KMR I/P 145.025 O/P 145.625 Wires -X

Gateways

EI2SHD 144.8125 Wires-X Gateway

EI2GCD 145.850 P25 Gateway

EI4GCG 70.425 ALLSTAR node

What is Waiting in the Wings?

1 x 70cm D-Star Repeater

1 x 70cm DMR Repeater completing the network to the South East.



Radio Society of Great Britain
Advancing amateur radio since 1913

ARE YOU A MEMBER OF THE RSGB YET?

ARE YOU MISSING THE BEST AMATEUR
RADIO MAGAZINE EVERY MONTH?



www.rsgb.org




Luca Clary
MFJ's brands Ambassador for Europe & Italy

  +39 327 23 911 40

 ambassadorsuit@mfjenterprises.com

 www.mfjenterprises.com

The world leaders in Ham Radio Accessories!

RSGB Radio News Services From GI

10:00 3640KHz LSB Dungiven

12:00 TG2354 Time Slot 2 BM Network

19:30 TG 880 Time Slot 2 Phoenix Network



Visit the WESCOM Radio Shop

SolderSmoke Daily News

Serving the worldwide community of radio-electronic homebrewers.

<http://soldersmoke.blogspot.com/>

Providing blog support to the Solder Smoke
podcast: <http://soldersmoke.com>



UK Six Metre Group

Dedicated to promoting 50MHz activity around the world



An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

Published by the UK Microwave Group



ARRL

The National Association for
Amateur Radio®

<http://www.arrl.org/>



<https://www.eurao.org/en/welcome>

Dates for the Diary

Bangor and District ARC Rally 17th June

International Museums on the Air
17th – 18th and 24th - 25th of June

Friedrichshafen June 23rd - 25th

International Lighthouses on the air 19th - 20th Aug

RSGB



The Radio Society of Great Britain (RSGB) is the national membership organisation of amateur radio enthusiasts. The society was founded in 1913 and incorporated in 1926. The Society is dedicated to the development of the science and practice of amateur radio. It works to increase awareness and understanding of amateur radio and to make the hobby accessible to everyone. Amateur radio licences were issued to the first UK radio amateurs in 1934. The RSGB represents the interests of UK licensed radio amateurs and is a not-for-profit organization that:

- Promotes the general advancement of the science and practice of radio communication or other relevant subjects.
- Facilitates the exchange of information and ideas on these subjects among its members.

The RSGB aims to obtain the maximum liberty of action consistent with safeguarding the interests of all concerned. RSGB membership is open to all who have an interest in radio communications. The national governing body (The Board) is elected nationally. The regional governing body (The Regional Council) is elected on a regional basis. The day-to-day management of the society is under the control of a small team of full-time employees who are based at the society's head office in Bedford. *RSGB Membership is just £59.00 and this includes 12 monthly technical magazines.* Affiliate your club and get the opportunity for all members to log in and read the online publication of RADCOM, RADCOM Basics and RADCOM Plus as well as receiving a hard copy of the Magazine for the Club. Apply here: <https://rsgb.org/main/join-us/join-the-rsgb/>



Welcome To EI3CC

What ever your interest in radio is then maybe we can help you.

Our aim is operating stations outdoors and getting involved with as many groups as possible. Scouting, youth clubs etc are all welcome.

So come join us and enjoy the world of

Collective Communication

WESCOM RADIO SHOP

<https://wescom.ie/>

WESCOM RADIO SHOP

<https://wescom.ie/>

AVIONIC – EXPERIMENTER / AMATEUR – MARINE RADIO



**Full Range of ICOM Experimental/Amateur
Radio Equipment**



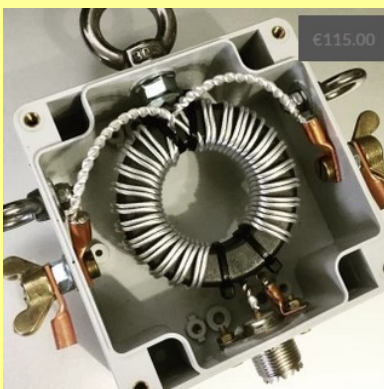
**Tennadyne World Class
Antenna systems**



Spid Rotators



ACOM Linear Amplifiers



**Baluns and UNUNs to
suit all applications**



ICOM Marine Radio



**Spiderbeam, Poles
and
Accessories**

**Check out our
Clearance Section on the
Website**

**Contact Us
00 353 (0)87 2552578
wescomradio@gmail.com
Deerpark, Oranmore,
Co. Galway, H91 X2YH**